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Contents

EDITORIAL: Prices of Chemical Products; Science and Food; The Wisdom of Caution	229	Chemical Matters in Parliament	240
Developments in Synthetic Resins	231	From Week to Week	241
Heavy Chemical Trade in India	232	Patent Literature	242
The Synthesis of Lubricating Oils	234	The Institute of Metals	243
The British Association of Chemists	235	International Atomic Weights	243
Society of Chemical Industry	236	Points from Manufacturers' Literature	243
British Chemical Standards	236	Weekly Prices and Market Reports	244
Two New Standards of Purity	237	Company News	246
News from the Allied Industries	238	DYESTUFFS MONTHLY SUPPLEMENT: Dyes and their Application; The Fastness of Coloured Materials to Light; Colloidal Aspects of Wool Dyeing with Acid Dyes; The World Dye Situation Reviewed	13-17
Letters to the Editor	239	Illustrations: Applications of Monel Metal; The Filtration of Raw Water Supplies	233, 237
New Technical Books	239		
Taxation of Industry	240		
The Society of Public Analysts	240		

Notes and Comments

Prices of Chemical Products

STUDENTS of the weekly prices of British chemical products, which form a regular feature of THE CHEMICAL AGE news service, will have noticed a revision in the style of their presentation. For some years it has been our practice to give four separate market reports, one dealing with the general conditions in Great Britain, based on direct information supplied by the British manufacturers concerned, one each for London and Scotland, and an independent report on the Manchester chemical market. While these individual reports enabled buyers in the respective areas to keep in close touch with the current local conditions, there was always the possibility that, in the prevailing rush, the local reports might be overlooked and the general prices taken to apply without distinction of locality. In order to make the market reports of greater value to those who consult them, and to render them more intelligible and more easily understood, we have so re-arranged them that buyers may see at a glance the prices applicable to every area. The information presented in the new form, although appearing under a single heading, and giving an impression of greater simplicity, is gathered from the same sources as before, and is compiled with even greater attention to accuracy.

A firm situated half-way between Manchester and Glasgow, for example, may be interested in saltcake. Instead of consulting separate reports, it may now find the respective prices side by side, and select whichever centre is more favourable for the placing of its order. In introducing the revision we have not been unmindful of the fact that, with the fluctuation of monetary values, market conditions have been changing so rapidly that in isolated instances prices have become out of date by the time they were published, and we

have taken steps to ensure that, so far as is reasonably possible, the information now given is a true index of the chemical market from week to week. At the same time we shall be pleased if readers who find that any of the prices quoted differ from those they are called upon to pay, will communicate with us, so that we may take the matter up with those who furnish us with the prices.

Science and Food

WE have seldom heard a more brilliant or a more succinctly comprehensive paper on any subject than the one presented under the above title to the inaugural meeting of the new Food Group of the Society of Chemical Industry, by Dr. L. H. Lampitt, the chairman of the Group, on Monday evening. It must have astonished a good many of those present to have put before them, in logical order and sequence, the extraordinary range of interests and contacts with which the chemist in the food industry is concerned, and Dr. Lampitt was doubtless correct in giving expression to the ever-increasing ambit of the food expert's field of work in the adoption of his title as stated, instead of "Chemistry and Food," which was advocated during the discussion following the paper, by the ever-youthful and vigorous Professor H. E. Armstrong. Dr. Lampitt was careful to point out that our ignorance of many of the subjects to be discussed by the Group, as opportunity offered, was greater than our knowledge, and unless vigorous steps are at once taken to co-ordinate existing work and systematically to arrange future investigations, the field of inquiry will extend at a more rapid rate than can be kept under survey, much less control. The old problem of making two blades of grass grow where one grew before has given place, under modern conditions, to the question of

making the one blade of greater real value to the community than two or more of the ordinary type. In other words, quality—in food at any rate—is often as important, if not more so, than quantity.

This aspect of the food chemist's work was particularly stressed by Dr. Monier-Williams, who took the chair at the meeting. He laid especial emphasis upon nutritive values and the importance of research upon nutrition. Such research has, in the immediate past, led to the astonishing discovery of the importance of accessory food factors—by whatever name they are called—and may well give results of as great, or greater, value in the future. How these factors are influenced by the present practice of canning everything susceptible of such treatment, and whether or not the remarkable increase in the consumption of canned products, which require no cooking, and not always warming, will ultimately lead to the disappearance of the art of cooking from the homes of the people and its concentration in the factory, are matters of more than ordinary interest. We cannot help feeling that there is, at the present time, too great a tendency towards the production of nutritives, as of medicaments, in "extract" or "tabloid" form, and we suspect that the human organism may not be altogether ready for the change, which may possibly have serious and important effects upon some of its functions. The good health of the community is, after all, a primary consideration, and if the Food Group keep this aspect of its work well in mind, we envisage for the new organisation a distinguished and increasingly useful career. Certainly it has started well, and we wish for it all the success its sponsors hope to achieve.

The Wisdom of Caution

SIR Henry McGowan, chairman of Imperial Chemical Industries, Ltd., addressing the Bradford Textile Institute last week, said he welcomed the change in our fiscal system, but he also recorded his satisfaction with the cautious and considered manner in which it was being made. No country of the world had such a complex industrial and commercial system as our own. Precipitate and ill-advised fiscal action might have done us more harm than good. We had been forced to abandon our free trade system, but in making the adjustments now necessary we must proceed slowly, testing each step as we advanced.

He defined industry as the mainspring which moved the whole mechanism of the economic clock. The Macmillan Committee had shown that the way of escape from the present depression lay either in raising the international price level or in a downward revision of profits, salaries, wages, interest, and rent, but unhesitatingly favoured the former. Unfortunately, experts were not agreed upon the precise machinery needed to restore the price level. Any effective action called for great measures of international co-operation, but no emphasis was needed to show how far the world was from agreement or co-operation. Great Britain had been rescued from a difficult position by the abandonment of the gold standard. The price level in this country must rise. In his view, it was not only misleading to argue that policy should be directed to preventing any upward movement in the British price level, but it was unwise. It was misleading because prices in many industries had been driven down by

unrestricted competition based on marginal costs of foreign producers. A tariff would rescue us from that subsidised competition, but when we were freed from that burden there would be no sound reason for not permitting the price level of such commodities to rise to the point at which it would normally have been fixed in the absence of the self-protective measures of price-cutting which we were forced to adopt. It was unwise, because fresh industrial activities could only be developed if there was the promise of profit. Though tariffs would help, manufacturers could help themselves by a greater spirit of co-operation, such as was shown in the electricity grid scheme and, in the shipbuilding industry, by the closing down of surplus shipyards.

The Calendar

- Mar. 14.**—Sir John Cass Technical Institute. Public Lecture. "Asphalt Paving Materials." Donald M. Wilson. 8.30 p.m. Jewry Street, Aldgate, London.
- Mar. 14.**—Institute of Metals (Scottish Section). Annual general meeting. "Some Notes on Condenser Tubes and their Packing." J. Stirling. 7.30 p.m. 39, Elmbank Crescent, Glasgow.
- Mar. 14.**—Society of Chemical Industry and Institute of Chemistry (Edinburgh Sections). "Plating." J. G. Roberts. 7.30 p.m. 36 York Place, Edinburgh.
- Mar. 14.**—Institution of the Rubber Industry. "The Transportation and Storage of Goods in the Factory." Colin Macbeth. 7.30 p.m. First Avenue Hotel, London.
- Mar. 15.**—Institute of Metals (N.E. Coast Section). "Refining of Copper." R. D. Burn. 7.30 p.m. Armstrong College, Newcastle-on-Tyne.
- Mar. 15.**—Hull Chemical and Engineering Society. "Some Aspects of Distillation." G. Whyatt. 7.45 p.m. Grey Street, Park Street, Hull.
- Mar. 15.**—Institute of Chemistry (Belfast Section). "Electro Titrations." E. Butterworth. 7.45 p.m. Royal Belfast Academical Institution.
- Mar. 15.**—Mineralogical Society. "The Distinction of Pyrite from Marcasite in Nodular Growths." F. A. Bannister. "On the Changed Composition of an Anorthoclase-bearing Rock-glass." Dr. L. Hawkes and Dr. H. F. Harwood. "The Spherulitic Rhyolites of Jersey." Dr. A. E. Maurant. "An Albitite from Ve Skerries, Shetland Isles." Dr. F. Walker. 5.30 p.m. Burlington House, London.
- Mar. 16.**—Society of Glass Technology. 2 p.m. Birmingham.
- Mar. 16.**—Society of Chemical Industry (Liverpool Section). Annual Section Meeting. "The Evaluation of Wood Pulp for Strength." Dr. H. Ainsworth Harrison. 6 p.m. University, Liverpool.
- Mar. 16.**—Royal Society of Arts. "Hydrogen and its Uses." Dr. E. F. Armstrong. 8 p.m. John Street, Adelphi, London.
- Mar. 16.**—Society of Glass Technology. 2 p.m. University, Birmingham.
- Mar. 17.**—Institute of Metals (Birmingham Section). "The Extrusion of Metals." R. Genders. 7 p.m. Chamber of Commerce, New Street, Birmingham.
- Mar. 17.**—Institute of Metals (London Section). "The Efficacy of Testing Methods." H. J. Gough. 7.30 p.m. 83 Pall Mall, London.
- Mar. 18.**—Chemical Society. Annual general meeting and anniversary dinner. University, Glasgow.
- Mar. 18.**—Electroplaters' and Depositors' Technical Society. "The Electrodeposition of Tin from Alkaline Solutions." L. Wright and F. Taylor.
- Mar. 18.**—Society of Dyers and Colourists (Manchester Section). Open discussion on "Wetting-out Agents." 7 p.m. 36 George Street, Manchester.
- Mar. 18.**—Society of Chemical Industry (South Wales Section). Annual meeting. 7.30 p.m. Thomas' Cafe, High Street, Swansea.
- Mar. 18.**—Chemical Engineering Group. Joint Meeting with the Birmingham Section of the Society of Chemical Industry. "Some Characteristics of Nickel and its Alloys." W. R. Barclay. 6.45 p.m. Chamber of Commerce Buildings, New Street, Birmingham.

Books Received

- ANNUAL REPORT FOR 1931 OF THE CENTRAL NARCOTICS INTELLIGENCE BUREAU, EGYPTIAN GOVERNMENT. Cairo: Government Press. Pp. 164.
- DIZIONARIO DI MERCEOLOGIA E DI CHIMICA APPLICATA. Vol. IV. Milan: Ulrico Hoepli. Pp. 1208. Lire 80.
- THE PREPARATION OF PURE INORGANIC SUBSTANCES. By E. H. Archibald. London: Chapman and Hall, Ltd. Pp. 384. 23s.

Developments in Synthetic Resins

Their Application in the Paint and Varnish Industry

The subject of synthetic resins, with special reference to their application in the manufacture of paint and varnish, was dealt with by Mr. E. A. Bevan and Dr. F. J. Siddle, in a paper read before a joint meeting of the Manchester Sections of the Oil and Colour Chemists' Association and the Society of Chemical Industry at a meeting held in Manchester, on Friday, March 4, when Mr. G. A. Campbell presided.

THE synthetic resins which were of interest to the paint and varnish industry could be roughly classified into six main types:—(1) Coumarone polymerisation products; (2) vinyl ester polymers; (3) monocyclic ketone condensation products; (4) urea resins; (5) phenol formaldehyde condensation products; and (6) glyptals. Only the phenol formaldehyde and the glyptal types could be regarded as having any footing in the paint and varnish industry at the present time.

Dealing with phenol-formaldehyde resins, of the spirit soluble type, the authors stated that by the condensation of phenol and formaldehyde under suitable conditions a spirit soluble resin was obtained which possessed thermo-hardening properties. Stoving lacquers were obtained by dissolving these resins in methylated spirits and acetone, yielding extremely hard water and acid-resistant films of good electrical properties. Such films, however, possessed poor flexibility and adhesion to smooth metal surfaces, and, in order to obtain satisfactory results, it was first preferable to roughen the surface by sand blasting or acid pickling. Moreover, they darkened considerably upon exposure to heat and light. Mixed condensation products of phenol, urea, and formaldehyde could be obtained by carefully refluxing together mixtures of these components followed by dehydration *in vacuo*, or the condensation might be carried out in the presence of a solvent such as butyl alcohol, the water being removed with the latter as a constant boiling mixture. Such products were soluble in methylated spirits to form stoving lacquers which were superior to straight phenol formaldehyde lacquers as regards adhesion and light fastness. These phenol formaldehyde resins, however, were not soluble in drying oils or hydrocarbon solvents, and to extend their application to the oil varnish field it was necessary to introduce various modifications.

Rosin-Modified Phenol Formaldehyde Resins

Dealing with rosin-modified phenol formaldehyde resins it was stated that the property of solubility in oils and hydrocarbons was imparted to phenol aldehyde resins by combining them with natural resins such as colophony and the acid value reduced by esterification with glycerol. These products were well known to every paint and varnish manufacturer throughout the world and their use had become firmly established in the industry. According to the processes disclosed in the patent literature rosin or ester gum might be condensed with a phenol and an aldehyde or ketone, or the latter might be first condensed with phenol and the resulting product further combined with rosin or ester gum. Other natural resins, such as copal, had been suggested instead of rosin, and these might be replaced in part by fatty oil acids. Thus, by varying the reactants, the properties of the resulting products could be considerably modified and a wide range of products obtained.

Undoubtedly the rapid development of this type of product was due to the demand for quicker drying finishes to compete in some respect with nitro-cotton and to the improved technique in the use of tung oil which has already known to produce harder and quicker drying finishes than those from linseed oil. Rosin-modified phenol formaldehyde resins, on account of their greater solubility, allowed the oil to be bodied at exactly the right temperature for yielding the most rapid drying films, and they were superior to the equally soluble rosin and ester gum because of the more durable qualities of the phenol formaldehyde complex. Varnishes prepared from phenol formaldehyde rosin condensation products and tung oil yielded films of excellent hardness and water resistance, but, on the other hand, they showed some tendency towards yellowing and were inferior in this respect and as regarded durability to varnishes of similar drying times prepared from drying-oil modified glyptals. In addition to their application for the manufacture of tung oil varnishes, they were used to

a considerable extent as the resin constituent in nitro-cellulose lacquers, but here again they were now meeting with competition from the glyptal type of product.

Oil-Soluble Phenol Formaldehyde Resins

Dealing with oil-soluble phenol formaldehyde resins it was mentioned that the final step, the production of phenol aldehyde resins, containing no natural resins, which could be cooked into oils in the same manner as employed for natural resins, was obtained by the condensation of selected phenolic bodies with formaldehyde. The solubility of phenolic resins in fatty oils depended very largely on the particular phenol, and it was found that by condensing a phenol of the type in which two aryl rings were directly united, such as para-hydroxy diphenyl with formaldehyde, then resins were obtained which would be cooked into drying oils and yielded varnishes of good durability and quick drying properties.

Such products had already made their appearance upon the market in this country subsequent to previous development in America where several firms were marketing resins of this type. They yielded quick drying varnishes of very good durability and resistance to water, mild acids and alkalis, but poor light-fastness was evident in varnishes made from such resins, and this, together with their present high price, tended to retard the rapid development and use of these products. Both of these factors might be reduced by using these resins in combination with rosin or ester gum. With such mixtures the outstanding properties of quick drying and durability were diminished. The time was not ripe at present to give definite opinion on the value of these products since there was no doubt that increased production and the discovery of different phenols suitable for this type of condensation would lead towards lower priced resins. However, this type of product represented the nearest approach to natural resins which had yet been made in a truly synthetic manner for application to the manufacture of varnishes.

The Glyptals

Synthetic resins which had so far found the greatest application in the paint and varnish industry, with the exception of the rosin-modified phenol formaldehyde resins, were those comprising condensation products of polybasic acids and polyhydric alcohols—the glyptals. These products were, in general, characterised by great toughness and flexibility, possessed remarkable adhesion to smooth surfaces and moreover yielded films which were extremely durable. It was not surprising, therefore, that the industry was quick to take advantage of these new resins possessing such properties, resulting in their wide and very rapid development. Such resins could be classified into three types according to their applications:—(1) Stoving lacquers (thermo-hardening); (2) cellulose lacquers (non-thermo-hardening); and (3) air-drying paints and varnishes (oxidisable).

International Power and Fuel Bibliography

In spite of the exceptional difficulties which confronted new publications in 1931, the *Power and Fuel Bulletin* issued by the British National Committee of the World Power Conference has had a successful first year and the subscriptions received amply warrant its continuance. This success has been due in large part to the welcome extended to the bulletin by the technical press and to the disinterested help received from scientific societies, institutions and individuals connected with the use of power in industry. The National Committees in Germany and Japan also began publication during 1931 and, through the assurance of immediate co-operation from a large number of industrial countries, the year 1932 should see the scheme to provide a complete international power bibliography well on its way to completion.

Heavy Chemical Trade Conditions in India

United Kingdom Prospects

Conditions and prospects of United Kingdom trade in India form the subject of a Report by Mr. Thomas M. Ainscough, Senior Trade Commissioner in India and Ceylon, which has lately been issued by the Department of Overseas Trade (H.M. Stationery Office, 3s. 6d. net). Mr. Ainscough makes extensive references to the heavy chemical situation, from which the following extracts are taken.

THIS Report states that India was one of the last of the great producing countries to feel the full force of the world-wide economic storm, but the fiscal year 1930-1931 will long be remembered as a period of acute commercial and industrial depression which was almost unparalleled in its intensity and reactions. Dealing with the installation of machinery for chemical plants, by-product works, etc., Mr. Ainscough stresses the necessity for economical and efficient erection. Considerable waste of money and dissatisfaction has been caused in the past in cases where machinery has been purchased in London by officials and merchants with little knowledge of local conditions and where mistakes have been made both in the design of the plant and in the erection of it. It must always be remembered that, speaking generally, engineers in India, whether they be in Government, municipal or private employ, are mainly occupied with administration and maintenance work and are, therefore, usually out of touch with the latest engineering practice. Indian labour is also, comparatively speaking, unskilled and requires constant and expert supervision. The United Kingdom manufacturer, therefore, who is prepared to maintain an erecting staff in conjunction with his selling and technical organisation in India will not only be placed in a strong position *vis-à-vis* his competitors in his securing of orders, but will be able to effect considerable economy and give satisfaction to the purchaser by quoting for the complete plant, erected and in running order, thereby making an efficient job and establishing his position for renewals and further extensions.

Competition between Germany and United Kingdom

One of the most satisfactory features of the recent crisis is that the steadily increasing market for chemicals has been very slightly affected. The total imports were only reduced from £2,092,500 to £1,957,500 in 1930/31 and, in the first four months of the current fiscal year, they actually rose from £907,500 to £703,125 owing to considerably increased imports of two United Kingdom specialities—carbonate of soda and caustic soda, which offset reductions in the case of sulphur potassium compounds, acids and disinfectants. The increased activity in the Indian textile industry is reflected in heavier imports of bleaching powder. The British share fell last year from 57 to 54 per cent., while that of Germany rose from 15½ to 18½ per cent. German competition is keen and the market is largely a battleground for the United Kingdom and German groups, each of which has an efficient and widespread marketing organisation. The protective duties on hydrochloric, nitric and sulphuric acids, alum, aluminium sulphate, copper sulphate, magnesium sulphate, sodium sulphate, sodium sulphide, zinc chloride and magnesium chloride will stimulate the nascent Indian chemical industry, but the market is so vast and capable of such expansion, as science is applied to agriculture and industrial development becomes widespread, that there would seem to be ample scope for the products of both the Indian and the United Kingdom industries. The entry into the market last year of trial shipments of Russian alkalies, which are being widely distributed by the depots of the Haverø Trading Co., and which are quoted at rates much below those ruling in the market, introduces a fresh factor which may become a serious menace.

The Question of Tariffs

Details are given of the main conclusions of the Tariff Board with regard to sulphuric acid, hydrochloric acid, nitric acid, magnesium sulphate, ferrous sulphate, potash alum, aluminium sulphate, sodium sulphide, zinc chloride, copper sulphate and Glauber salts. The Government of India, as a result of the findings of the Tariff Board, proposes to place protective duties on all these products, with the addition of a proviso that the duty on any of these articles shall in no case be less than the duty which would be charged

if the articles were included in Part V of the Statutory Tariff Schedule. This proviso is required to prevent loss of revenue while the revenue duty, which now bears a surcharge of 5 per cent. *ad valorem* is higher than the protective duty. The existing duty on copperas must be retained unchanged in view of Article II of the Commercial Convention between India and France of 1903. The Government will be prepared to discuss with representatives of the chemical manufacturing interests in India how the question of developing the industry can best be studied further. In the view of the Government a drastic reorganisation of the industry is indispensable, if success is to be achieved, and one of the most important questions to be considered will be how that reorganisation is to be brought about.

When referring this matter of the heavy chemical industry to the Tariff Board, the Government gave the Board power to extend its inquiry to other chemicals. The Board recommended that a protective duty should be imposed on magnesium chloride. The Government accepted this recommendation and agreed that the period of protection should be fixed at 7 years at the expiry of which the question should be re-examined. The Government was unable to accept the recommendation that power should be taken to increase the duty by executive action to offset any fall in import prices. In its view such a step requires special justification; and it is not satisfied that its application to magnesium chloride is necessary, for the price of this chemical in India has been stable for the last three years and according to the information supplied to the Tariff Board that price was not remunerative to the foreign manufacturer.

Imports of Chemicals

The steady advance in the imports of chemicals, which has been a marked feature of recent years, was only slightly retarded during 1930-31. The total imports were:—1925-26, £1,522,500; 1926-27, £1,729,000; 1927-28, £1,980,000; 1928-29, £1,800,000; 1929-30, £2,092,500; 1930-31, 1,957,000.

The following table gives the percentage share of the principal countries of consignment over a period of years:—

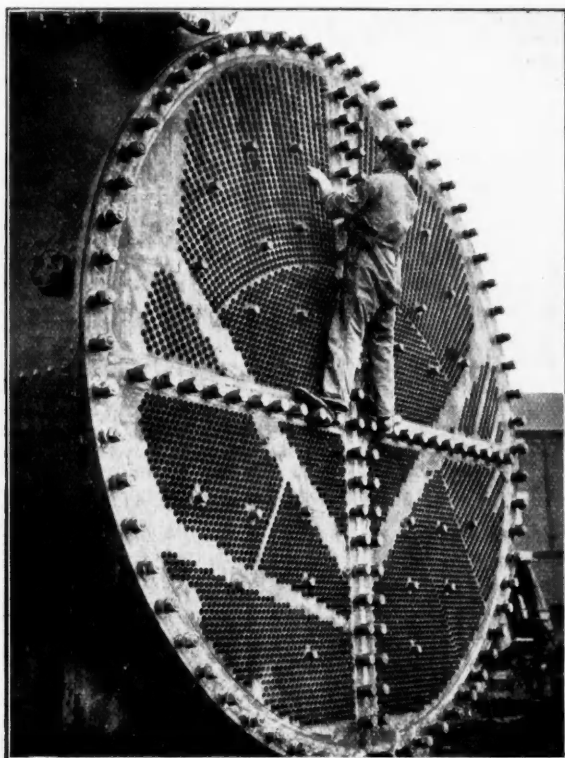
	1913-14 (pre-war) Per cent.	1928-29 Per cent.	1929-30 Per cent.	1930-31 Per cent.
United Kingdom	74.7	59.4	57.2	54.0
Germany	12.4	16.7	15.7	18.3
United States	0.3	4.7	4.2	5.2
Italy	5.2	5.8	7.6	7.3
Kenya Colony	—	2.5	2.6	2.3
Norway	0.5	1.7	2.0	1.6
Japan	1.5	1.4	1.9	1.7
Other Countries	5.4	7.8	8.8	9.6
Total	100.0	100.0	100.0	100.0

The reduction in the United Kingdom share of 3 per cent. is due to diminished imports of sodium carbonate and, to some extent, to the boycott movement in western India. The competition which is being met from the German "I.G." working through the Haverø Trading Co. is becoming increasingly acute.

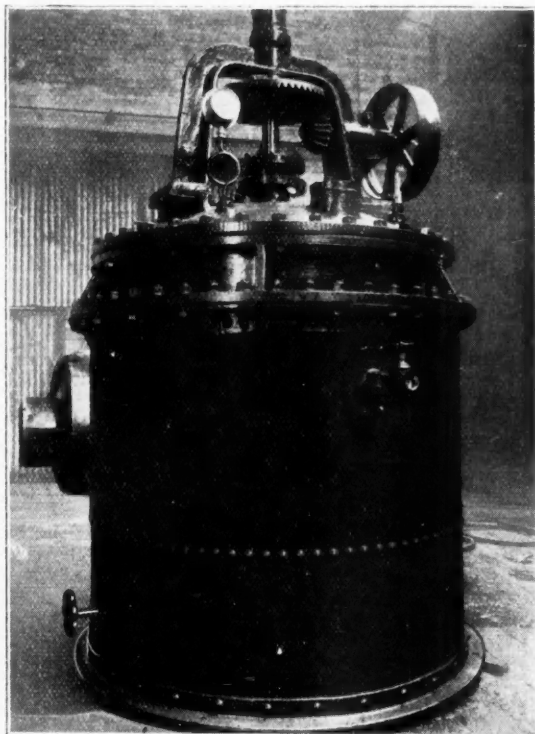
Sources of importation of dyes obtained from coal-tar alizarines were:—

Countries of consignment.	1929-30 lbs.	£	1930-31 lbs.	£
United Kingdom	1,404,684	52,500	723,741	30,000
Germany	3,584,571	135,000	2,369,593	90,000
Netherlands	212,750	7,500	1,008	—
Belgium	112	—	—	—
Other countries	125,538	7,500	149,445	7,500
Total	5,327,655	202,500	3,241,287	127,500

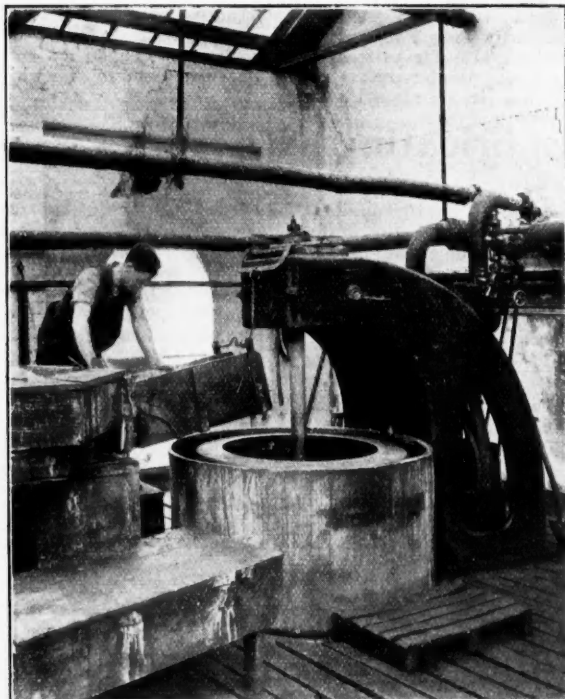
The imports from "other countries" are almost entirely drawn from the United States.



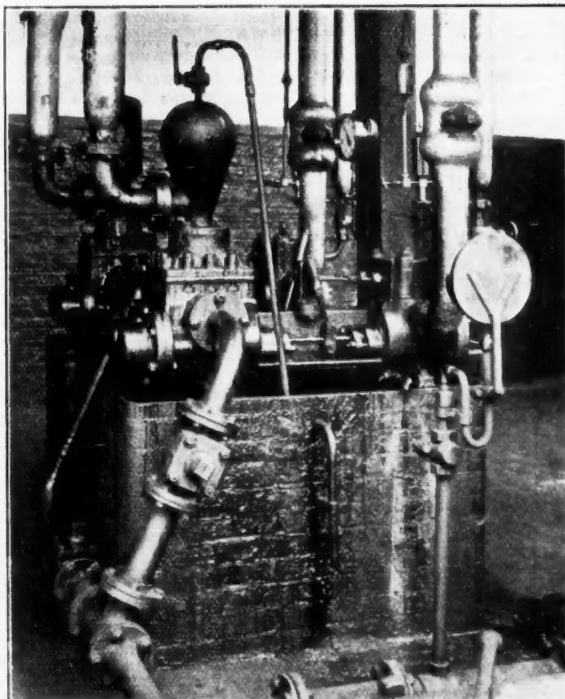
POWER STATION CONDENSER TO DEAL WITH 3,000,000 GALLONS OF WATER PER HOUR, THE BRASS TUBE PLATES MADE BY L.C.I. METALS, LTD.



CAST-IRON VERTICAL AUTOCLAVE WITH MILD STEEL JACKET AND STIRRING GEAR (W. J. FRASER AND CO., LTD.).



TWO MODERN APPLICATIONS OF MONEL METAL. *Left*: CENTRIFUGAL WITH MONEL METAL BASKET, HANDLING ACID-SATURATED SULPHATE OF AMMONIA. *Right*: LEE HOWE PUMPS, WITH MONEL METAL RODS, PUMPING HOT TAR AT THE WORKS OF THE SOUTH METROPOLITAN GAS CO. (MONEL-METAL, LTD.).



Some Recent Examples of British Chemical Plant

Countries of consignment.	Anilines.		1930-31	
	lbs.	£	lbs.	£
United Kingdom	989,614	105,000	821,045	90,000
Germany	9,171,076	865,000	9,494,354	960,000
Netherland	80,620	7,500	23,116	—
Belgium	54,930	7,500	23,116	7,500
France	38,062	7,500	65,870	15,000
Switzerland	706,557	142,000	486,895	120,000
Italy	736,309	52,500	685,665	60,000
United States	1,510,606	112,500	1,165,993	97,000
Other countries	31,667	—	27,087	7,500
Total imports	13,319,441	1,200,000	12,828,889	1,357,500

The greater activity in the Bombay and Ahmedabad mills is reflected in increased importations of dyestuffs. Germany has been able to improve her commanding position *vis-à-vis* her principal competitors and has probably been able to take some advantage of the anti-British political propaganda which has been so rife throughout the Bombay Presidency. It is to be hoped that United Kingdom dyestuffs will secure an increasing share of the Indian demand, which is bound to expand with the development of the country's textile industries.

Soap

After attaining a record figure of over £1,250,000 in 1929-30, the importation of soap has shown a very material decline to £840,000 in the year under review. While this reduction is primarily due to the effect of the general depression, there is no doubt whatever that it was intensified by the boycott campaign. A great fillip was given to soap production in India, as indeed the increased imports of caustic soda suggest. So far as household and laundry soaps are concerned, United Kingdom makers are *hors concours* thanks to the excellence of their productions and to their efficient selling organisation. In 1929-30 the only competition experienced was from France (30,852 cwt.). In toilet soaps, however, the United Kingdom in 1929-30 supplied 75 per cent., the United States 14 per cent., Germany and France each 2 per cent. The United States productions are extensively advertised and are actively pushed by travellers and agents.

Paints and Painters' Materials

There has been a sharp fall in the total imports, almost entirely due to the trade slump. In view of the growing paint industry in India, which is being developed in modern

plants by some of the leading United Kingdom makers, there is not likely to be any considerable future expansion in the import trade. German and Japanese competition is keen in the cheaper paints for bazaar use. Japan supplies red lead while the United States supplies directly competitive goods for the trade with the Railways and Industries.

In 1929-30 the United Kingdom supplied 44 per cent., Sweden 32 per cent. and Germany 19 per cent. of the genuine turpentine. The small imports of turpentine-substitute were almost entirely derived from the United Kingdom. The important varnish trade was supplied by the United Kingdom (87 per cent.), Germany (5 per cent.), and the United States (4 per cent.). The competition from the Indian branch works of one or two United Kingdom manufacturers will be increasingly experienced in future. The Indian railway carriage works provide a valuable market for United Kingdom varnishes.

Drugs and Medicines

The principal items enumerated under this comprehensive heading are: camphor, asafoetida, codliver oil, proprietary and patent medicines and quinine salts. The imports of camphor were largely shared by Germany and Japan. Asafoetida is obtained exclusively from Persia. Codliver oil is mainly obtained from the United Kingdom with lesser quantities from Holland and Germany. The valuable trade in proprietary and patent medicines in 1929-30 was divided between the United Kingdom (50 per cent.), Germany (15 per cent.), United States (13 per cent.), France (10 per cent.), Italy Holland and Norway. Of the quinine salts, the United Kingdom supplied 52 per cent., Germany 29 per cent., Java and United States 4 per cent. and Holland 3 per cent. Of the total trade in drugs and medicines in 1929-30 the United Kingdom contributed 42 per cent., Germany 18 per cent., Japan 12 per cent., United States 10 per cent. and France 6 per cent.

A boycott of United Kingdom drugs and preparations was experienced in the Calcutta and Bombay markets during the summer and autumn of 1930, which has had some effect on the imports during the year. Conditions in August, 1931, were greatly improved, however, and the principal difficulty now experienced is the general stagnation and lack of confidence. United Kingdom manufacturers suffer most from the lack of a Pure Food and Drugs Act in India, as their competitors are able to compete with drugs which do not come up to the standard of the British Pharmacopoeia, and for which there is no standard quality.

The Synthesis of Lubricating Oils

Observations of Professor A. W. Nash

THE production of lubricating oils by the hydrogenation of coal and by processes of polymerisation applied to ethylene was discussed by Professor A. W. Nash, head of the Department of Oil Engineering and Refining at the University of Birmingham, in an address delivered to the North Staffordshire Institute of Mining Engineers at Stoke-on-Trent, on March 1.

At present, the results of researches indicate two possible means of obtaining lubricating oils synthetically:—(1) Hydrogenation of certain heavy aromatic hydrocarbon fractions from high temperature coal tar; (2) the building up of high molecular weight hydrocarbons by polymerisation of the olefines, ethylene and its homologues, or by condensation of these olefines with other hydrocarbons, notably aromatic hydrocarbons. The solid aromatic hydrocarbons derived from coal tar have been hydrogenated by Spilker to form viscous liquids which he describes as of sufficient stability for use as lubricants. The properties of these oils, such as specific gravity and temperature-viscosity relationship, are not quite the same as those of petroleum oil lubricants. Some claims have been made, in the patent literature, for the production of lubricating oils, with petrol, by the hydrogenation of brown coal, but such claims may not apply to bituminous coal. Derivatives of naphthalene have also been studied, and lubricating oils, of excellent quality, are claimed by volatilisation of alkylated naphthalene hydrocarbons.

Lubricating Oils from Ethylene

The formation of lubricating oils from ethylene, a constituent of coke oven gas (1 per cent.) and of vapour phase cracking gas (27 per cent.), has been the subject of researches

carried out at Birmingham University during the last four years. By the treatment of ethylene gas, under pressure, with aluminium chloride, this gas polymerises to form liquids. This polymerisation proceeds further until many molecules of ethylene have condensed together, and oils in boiling range from petrols to heavy lubricating oils are formed. At room temperature, the result of treating ethylene under pressure with aluminium chloride is a viscous free oil composed largely of hydrocarbons of the naphthene series, and an oil which can be separated from an aluminium chloride-hydrocarbon complex, which is olefinic in character, and which is considered to be an intermediate stage in the formation of free oil. At higher temperatures, between 100° and 180° C., the crude oil from ethylene is lighter, and in addition to light spirits of paraffinic nature and intermediate distillates, it contains lubricant fractions probably of polynuclear naphthenic structure, similar to the viscous oils produced at low temperatures.

Other olefines are amenable to similar polymerisation reactions to yield viscous oils, and in this connection there are the patents of Allenet, in which viscous oils suitable for use as lubricants are described as formed by passing olefine gases under pressure into suspensions of aluminum chloride in light petroleum. When olefines such as ethylene are passed into middle oils (from coal tars) containing aluminum chloride, not only do polymerisation processes take place, but also condensation between the middle oil hydrocarbons and the olefines. It has been suggested that the two reactions probably overlap, but the result is that a thin middle oil fraction from a coal tar can be converted to a highly viscous lubricating oil.

The British Association of Chemists Annual Dinner of the London Section

THE annual dinner of the London Section of the British Association of Chemists was held at the Broad Street Station Restaurant, on Saturday, March 5, when Mr. H. M. Morgan, chairman of the section, presided. The guests included Professor G. T. Morgan (President of the Society of Chemical Industry), Professor A. G. Green, Mr. A. A. Melhuish (President of the Pharmaceutical Society) and Mr. E. Richards Bolton.

MR. S. REGINALD PRICE (President of the B.A.C.), proposing the toast of "Chemistry," spoke of the importance of chemistry to the nation, and said the aim of the British Association of Chemists was to promote the study of chemistry, to help the chemist to make a position for himself, and to help industry. There had been some wonderful discoveries in recent years such as the discovery of the vitamins, particularly vitamin D. The development of bio-chemistry, textile chemistry, dye chemistry and other branches also meant a great deal to humanity.

Early Days in the Dyestuffs Industry

Professor Green, who responded, first referred to the influence of chemistry upon the life and mental outlook of the chemist. He then spoke of his early days in the former dyestuff works of Brooke, Simpson and Spiller, Hackney Wick, where he obtained his first appointment after leaving college, when, in 1885, he took Professor Meldola's old position of research chemist at these works at a salary of £150 per annum, Professor Meldola having been appointed to the Chair of Chemistry at the Finsbury Technical College. There were five other chemists besides himself at these works and anyone who discovered a new dyestuff of value manufactured it himself and usually also tested the raw materials, did the costings and drew up the pattern cards and circulars in connection with it.

The Link Between Chemistry and Pharmacy

MR. A. R. MELHUISE, who also responded, said that pharmacists felt they had a close link with those engaged in chemistry and devoting themselves as they did to the relief of suffering humanity, the pharmacists looked to the chemists for help in connection with remedies that were used in pharmacy. The pharmacists also looked to the chemists of this country to provide them with synthetic preparations so that they would not have to be going constantly to the Continent for them. Everything should be done to prevent the tremendous influx of synthetic remedies from the Continent because they could be equally well made in this country with a certain amount of application of effort. The closeness of the link between pharmacy and chemistry was seen in the fact that the first laboratory for teaching chemistry in this country was established by the Pharmaceutical Society of Great Britain in 1842 in Bloomsbury Square, and the efforts then made could not be too highly appreciated. Professor Green had mentioned chemical education and that was a subject in

which the Pharmaceutical Society itself was greatly interested. It was now the intention to establish post-graduate lectures in bio-chemistry and pharmaceutical chemistry, which should lead to better understanding of the efforts being made in pure chemistry. On the question of remuneration, also mentioned by Professor Green, there was little doubt that the chemist was not adequately remunerated for the work he did. That was one of the things the British Association of Chemists should take seriously in hand because undoubtedly pure chemistry had not been recognised nor remunerated at its proper worth. The same remark held good in respect of the professional side of pharmacy and that had necessitated the pharmacist doing many other things in order to get an adequate living.

The toast of "The Guests and the Ladies" was proposed by Mr. A. J. C. Cosbie, and was replied to by Mr. E. Richards Bolton, who expressed his satisfaction at the good relations existing between the Institute of Chemistry and the Association and the fact that the Institute now recognised the Association was doing work which was not covered by the Institute.

Co-operation in Publicity

PROFESSOR G. T. MORGAN, proposing "The British Association of Chemists London Section and the Chairman," urged the pooling of resources in regard to publicity for chemistry and the work of the chemists. For instance, the B.A.C. had a journal which cost about £100, the Institute of Chemistry had a journal which cost £400 or £500 and the Society of Chemical Industry had a journal which cost a good deal. Would it not be infinitely better, if instead of these several journals, they had one journal which, whilst representing chemistry would also represent the main chemical associations? Commenting on research problems, he referred to the pre-war period when the British chemical manufacturers were competing with organisations which had tremendous financial backing. His own firm, at that time, never had a capital of more than £200,000, the capital of Levinstein's was less and the capital of Brooke, Simpson and Spiller was also on the small scale. Nevertheless, when we considered the present great organisations in this country, for instance, the British Dyestuffs Corporation branch of the I.C.I., he doubted whether with their much greater financial resources they now employed more research chemists in relation to their capital than did such firms as Brooke, Simpson and Spiller, Read Holliday and Co. and Levinstein. Indeed, in relation to the amount of capital, those early firms spent more upon research than did the present large combines.

The CHAIRMAN, acknowledging the toast, spoke of the good work done by the Association for employees who had fallen on hard times and of the excellent work done by Mr. Woodley, the general secretary. He also spoke in terms of appreciation of the work done for the London Section by Miss Wright, the hon. secretary of that section.



Photo by The Nonflash Banquet Photo Co.

Society of Chemical Industry

Inaugurating the new Food Group

THE meeting of the London Section of the Society of Chemical Industry on Monday, March 7, was a joint one with the new Food Group of the Society, this being the inaugural meeting of that Group. Dr. Monier Williams, chairman of the London Section, presided.

DR. L. H. LAMPITT, chairman of the Food Group, read a paper on "Science and Food" in which he outlined the work awaiting the new Group. He divided the work which it should take in hand under the six following headings: raw materials production; transport of raw materials; preserving raw materials; processing of materials; conveying and transport of processed materials, and finally, the preservation of processed materials. The need for co-operation between chemists and the various food industries was strongly emphasised and Dr. Lampitt pointed to the lack of knowledge of a fundamental character concerning many foodstuffs as indicating the need for much more research work. He looked to a great expansion in the near future of methods of transport involving refrigeration and commented that the old ice and salt refrigeration days must now be regarded as over.

Speaking of standardisation in relation to the handling of foodstuffs generally, Dr. Lampitt commented on the need for some engineering knowledge on the part of the chemist so that he could discuss plant problems with the engineer. The question of corrosion of metals by food-stuffs offered a wide field for investigation and our knowledge of the canning industry would be far more complete after the study of such problems as the correct condition of the fruit, etc., before canning. The modern tendency was for firms to employ less labour in their factories and to expect more brains to be put into their equipments. Referring to claims often made in certain directions by way of propaganda, Dr. Lampitt expressed regret that on so many occasions these should be backed by reports from chemists. Reference was next made to the openings for research in connection with the baking of bread and the need for going right back to the history of the wheat used. Again, in connection with the packing of food-stuffs there was an urgent necessity for co-operation between the food manufacturers and the makers of containers. Another direction in which the work of the food chemist should be extended was in the study of the conditions under which food was stored in retail shops. Again, in the control of factory premises, the chemist had hitherto played but a very small part.

As to standards and standardisation, Dr. Lampitt said there are three standards at the present time, viz., personal, trade and legal, but there was some evidence to suggest that the attainment of standardisation is not regarded as of primary importance by some food manufacturers. Trade agreements as to standardisation were in use in few cases and where they did exist they were not legally binding. The Food Group would aim at educating the manufacturers and employers of chemists. Too often the chemist was not allowed general access to the works or the directors, and his results were interpreted to the directors by the works manager. Another aspect of the work of the Food Group would be to act as a liaison between food manufacturers and the medical profession.

Phosphates in Morocco

ACCORDING to a Report on *Economic Conditions in Morocco*, 1930-31, recently issued by the Department of Overseas Trade (H.M. Stationery Office, 2s. net), world agricultural depression caused diminished sales of phosphates in 1930, as artificial manures were less in demand. The value of the exports amounted to 247 million francs. The number of workers employed in the phosphate fields in 1930 was more than in 1929, but the prospects were such as to cause the dismissal of one-third of the employees at Kourigha, in the Oued Zem district, towards the end of the year, and new housing schemes had to be abandoned. Nevertheless improvements were effected during the year in the electrical haulage installation and the drying plants were extended. The newly opened fields in the Ben Guerir area are expected to be more profitable to work. The super-phosphate factory at Casablanca exported 13,400 tons in 1930.

British Chemical Standards

Report on Fifth Period of Three Years' Working

THE Report on the Fifth Three Years' Working of the British Chemical Standards Movement, mention of the general meeting of which appeared in THE CHEMICAL AGE of January 30, has now been issued. It is of pleasing appearance, printed in bold type for easy reading, the subject matter of different sections being clearly set out in the contents page for ready reference. Then follow brief explanatory remarks in six European languages, which show what the movement is, and its objects; next, what the standards are, how they are jointly standardised by co-operators representing different countries, interests and sections of industry; what their function is; how figures in chemical specification have no fixed value unless gauged by a definite standard sample, recognised by chemists all over the world, which enables errors in analysis to be detected just as a template reveals error in a section; and lastly, who benefits by their use, showing that ultimately, the whole community does.

After epitomes of the four previous three years' working follows the main report for the fifth period, showing development and progress. A number of tables make this clear in various aspects. At the end of the last period (September, 1931) there were 104 co-operators, of which 79 are in Great Britain and 25 in other countries, with 1,121 laboratories using the standards, 853 in Great Britain and 268 in 14 European countries and 20 in Asia, America, Australia, Africa and Oceania.

A list of industries using them, besides including those one would expect—relating to iron and steel, non-ferrous metals, ores, slags, agriculture, railways, motors and aircraft—is followed by another which is striking because of the widely differing types of business in which one might not expect the standards to be required. As regards tonnage controlled by these standards, it is shown that a co-ordinating effect is exercised over many millions of tons of material representing a large value, while disputes and delays are saved and benefits gained in many ways at an infinitesimal cost per ton. Among the users there are at least forty-seven universities, colleges and technical schools, both here and abroad.

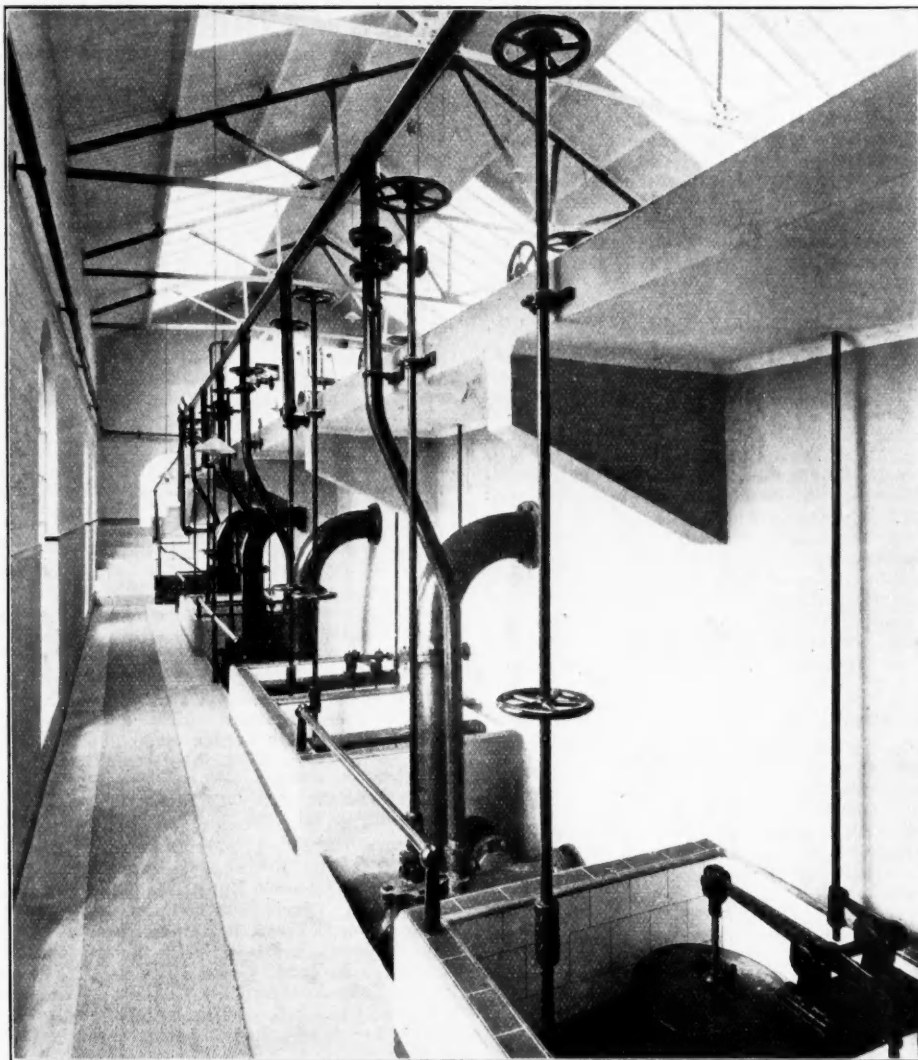
An Educational Advantage

A subsidiary educational advantage is the supply of a special series of inexpensive analysed samples which professors, etc., can give out to students, on which the latter can practise analysis. These, too, already over 45 colleges, etc., are using. A new development, viz., the supply of pure standardised reagents and metals for volumetric analysis, calorimetry and pyrometry of definitely determined exact composition, is described. Full lists both of the co-operators and of the standards now available are given.

In some extracts from a talk at Johannesburg before South African chemists by the senior organiser, he traces the growth of the analytical standardisation work from 1876 onwards, including the use of standardised methods under the "Analoid" system by which already fifteen million tests have been made—and which is described in a leaflet inserted in the report—till it culminated in 1916 in the commencement of the present movement described in successive reports.

Reference is made to the endeavour by the Association of British Chemical Manufacturers to get one central standardising body, which has resulted in the change of title of the B.E.S.A., with an extended charter to include chemical standardisation, to that of the "British Standards Institution"; and to the prospect of this proving no hindrance but rather a help to the British Chemical Standards movement; to clearing house work, by which the methods and working of the chemists engaged in the preparation of British chemical standards tend to be clarified and to yield consistent results.

The rapid and ever widening growth of the movement, in spite of the many difficulties in these disturbed times, and with no external financial support, demonstrates the need that is felt for the work, and what can be achieved by voluntary co-operation where the dominating purpose is to get on with the work, and conventional formalities are subordinated and kept to a minimum. A copy of the Report will be sent to chemists, engineers, and others interested on application to the organising headquarters: Ridsdale and Co., 3 Wilson Street, Middlesbrough.



This illustration shows an installation of Paterson Rapid Gravity Filters, as supplied by the Paterson Engineering Co. Ltd., for dealing with raw water supplies. The accessibility of the control valves on this plant, as well as the refined appearance of the gallery which is shown, represents a model which could be usefully followed in the design and layout of certain types of chemical plant.

Two New Standards of Purity

Acetic Acid and Sulphuric Acid

WHILE it is usually rightly considered that acetic acid is one of those chemicals which are readily available in a high degree of purity, there are often occasions when an acetic acid is required of a grade superior to the analytical reagent (A.R.) standard. The usual difficulty encountered is the presence of reducing substances. The General Chemical and Pharmaceutical Co., Ltd., of Judex Works, Sudbury, Middlesex, however, is now in a position to offer a special acetic acid glacial, equal in all respects to the A.R. acid, but in which the elimination of reducing substances has been carried considerably further than is the case with any other acetic acid which has come to our notice. One of the largest laboratories in the country recently encountered the need for such an acid, and, after examining acids from as many sources as were available to them, standardised on the Judex product, which they considered to be the only one which consistently met their very exacting requirements.

Sulphuric acid being one of the most important of the primary materials the introduction, on a semi-plant scale,

of a new and superior grade is also a matter of importance. All known chemical tests have been applied to the Judex (new special grade) sulphuric acid A.R., and such traces of impurities as appear are of such a nature and so minute that it is impossible to decide whether they arise from the acid itself, or from the glass or reagents used. In offering this acid special precautions are taken to avoid any contamination after purification. One point of immediate practical importance is the application of this acid to the Molisch test for carbohydrates. Most samples of pure sulphuric acid A.R. will be found to give a side reaction, having no relation to the test, which masks the colouration, but acid of the Judex grade gives a perfect reaction.

German Wood Distillation Industry

THE recent absorption of the Verein für Chemische Industrie by the Gold-und-Silber Scheideanstalt completes the concentration process in the German wood distillation industry under the latter firm. Other chemicals being produced by the Scheideanstalt include activated carbon, solvents, lacquers, insecticides and salts of precious metals.

News from the Allied Industries

Safety Glass

SPLINTEX SAFETY GLASS, LTD., has taken over the business and works of the Newtex Safety Glass Co., Ltd., as from March 5. The Newtex Safety Glass Co., Ltd., announces that it has entered into a provisional agreement with Splintex Safety Glass, Ltd., whereby the interests of the two companies will be amalgamated. Splintex Safety Glass, Ltd., has an authorised share capital of £300,000, of which £259,740 is issued. The Newtex Company's authorised capital is £130,000, of which there is issued £82,615 in ordinary shares and £30,000 in deferred shares.

Iron and Steel

LEADERS OF THE IRON AND STEEL INDUSTRY spent Monday afternoon in putting the finishing touches to their case for an increase in the tariff of 10 per cent. on imported iron and steel. It was intended to leave the application with the Tariff Advisory Committee on Wednesday, and there is every hope that it will be considered at an early date by Sir George May and his colleagues. The Federation of Iron and Steel Manufacturers have been engaged for nine months in the preparation of their case. The industry desires a tariff graded according to the type of material, with a higher duty on the finished product. Imports of Belgian steel are not being seriously checked by the new duty. Semi-finished Belgian steel has been offered during the past week at prices which nullify the new duty, and the full advantages of the nation's new economic policy cannot be secured by the iron and steel industry unless steps are taken to increase the duty on certain imported materials.

Sheep Dips and Insecticides

COOPER, McDOUGALL AND ROBERTSON, LTD., manufacturers of sheep and cattle dips, etc., suffered during the year ended September last from the continued adverse exchanges operating in many of the company's principal markets, which occasioned heavy losses on remittances brought home. Further, it has been necessary to create additional reserves on the liquid assets at September 30 in those countries where depreciated exchanges operated. These exchange losses and reserves total £143,796, against £68,797 for the preceding year. The trading profit was only slightly lower at £226,642, against £238,097, but owing chiefly to the exchange allowances, the net profit is £52,537 lower at £84,265. No dividend is recommended on the ordinary shares, against 7 per cent. for the preceding period. The directors prefer, after meeting the preference dividend, to place £25,000 to general reserve, increasing that fund to £145,000, and to raise the carry forward from £33,047 to £39,989.

Non-Ferrous Metals

ANNOUNCEMENT HAS BEEN MADE of the formation of a Magnesium Development Co., in the United States. This new company represents a combination of the Aluminum Company of America and the I. G. Farbenindustrie A.-G., in the use of patent rights for the production of magnesium alloys. Patent rights of the I.G. and the Aluminum Company will be taken over by the newly formed organisation with the board of directors comprising representatives from both participating companies. Special attention will be devoted to the manufacture of the I. G. alloy, Elektron, which is finding an increasing outlet in the aircraft industry.

THE INTERNATIONAL LEAD POOL, which came into operation in October, 1929, was dissolved as from the end of February. Unlike the copper and tin scheme, the pool was loosely constructed, and, although marketing of the metal was controlled to a certain extent, no attempt was made to peg the price, and it became inevitable, when the pool agreement fell due for its monthly renewal, that it should be dissolved, since the 10 per cent. tariff presented itself as a *fait accompli*. Clearly, a way out of the difficulties could have been found in leaving the British Empire market as an agreed preserve for the Imperial producers. Equally, opposition can have come only from one quarter, and that is from the big American members of the pool, American Smelting and Refining Co. and the International Smelting Co.

Rubber

THE TREND OF DEVELOPMENT in latex processes was the subject of a paper by Mr. G. W. Trobridge, read before the Midland Section of the Institution of the Rubber Industry in Birmingham, on March 8. Mr. Trobridge said the increasing use in manufacturing processes of rubber latex, the milky fluid in which form rubber first appeared from the tree, was one of the most remarkable developments of recent years in the rubber world. Not only had the new processes enabled many articles to be improved and yet be made more cheaply, but they had also led to the production of articles previously unknown on the market. The development of a synthetic leather, with the porosity of the natural product, was foreshadowed as an early probability.

Paint and Varnish

INDESTRUCTIBLE PAINT AND STANDARD VARNISH, LTD., has decided, subject to the approval of the shareholders, to change its name to "Indestructible Paint Co., Ltd." In a circular letter to shareholders it is stated that the present name has proved cumbersome, and since the company purchased the British and European interests of Standard Varnish Works of New York, potential and existing customers have expressed the belief that it is a foreign concern, financed and controlled from America. This impression has operated in many instances to the disadvantage of the company, especially during the last twelve months, whereas over 98 per cent. of the capital is held by British subjects. New articles of association are also recommended in order to bring the regulations of the company up-to-date with the Companies Act, 1929, and to comply with certain requirements of the London Stock Exchange with a view to making application to have the company's shares quoted on the official list. Extraordinary meetings will be held on March 23.

Artificial Silk

THE "AKU" ARTIFICIAL SILK CO., according to information from Amsterdam, intends to reduce production by about 20 per cent. and dismiss a large number of employees. The "Aku" (Algemeene Kunstzijde Unie, Naamlooze Vennootschap) is an artificial silk manufacturing concern with works at Arnhem, Ede and Rotterdam, and directly or indirectly owns interests in artificial silk manufacturing companies in Germany, Holland, Great Britain, U.S.A., etc., including British Enka Artificial Silk Co., Ltd., Associated Rayon Corporation, Ltd., "Snia Viscosa," British Bemberg, Ltd., and British Breda Silk, Ltd. It has an authorised share capital of Fl.230,048,000, of which Fl.143,354,200 has been issued and paid up. The company depends for 93 per cent. of its trade on exports, and as there are so many obstacles in the way of exports it is necessary to reduce production.

A DRASTIC SCHEME OF CAPITAL REDUCTION is proposed by the directors of the Bulmer Rayon Co. Holders of the 8 per cent. cumulative preference shares are asked to consent to the nominal value of their shares being written down from £1 to 1s. 8d., while under the scheme the nominal value of each 1s. deferred share will be reduced to 1d. It is then proposed that every three preference shares be consolidated into one preference share of 5s. The effect of the scheme is to reduce the issued capital from £598,501 to £49,875. The deferred shareholders, though their capital is drastically cut, will still retain the whole of the equity of the business.

IT IS RUMOURED that plans for a new rayon factory at Greenfield, near Holywell, have been almost completed by Courtaulds, Ltd., and that the work of building will be commenced as soon as certain further details have been settled. Another rayon concern planning to extend production is the British Enka factory at Liverpool, where the engineering staff is at present engaged on the erection of additional spinning machines. Enka recently purchased the spinning plant formerly owned by British Netherlands, Ltd., whose factory at Wigton never reached the producing stage. There also seems to be good prospects that the Littleborough factory of Atlas Artificial Silk Processes, Ltd., will again be started. Additional capital is required and it is understood that negotiations, with this end in view, are proceeding between the directors and a French and Swiss rayon group.

Letters to the Editor

Corrosion-Resisting Materials

To the Editor of THE CHEMICAL AGE.

SIR,—A few weeks back (THE CHEMICAL AGE, January 9, page 30) there appeared in your columns an appeal to purchasers of chemical plant to support the "Buy British" campaign. In that letter, which came from Mr. J. Davidson Pratt, the secretary of the British Chemical Plant Manufacturers' Association, it was suggested that all plant requirements could now be satisfactorily met in this country, and in support of this statement the hesitating purchaser was reminded of the display of plant which was gathered together at the British Chemical Plant Exhibition held in London in July, 1931.

Now my requirements have been in the nature of corrosion-resisting material, chiefly lead-lined plant, and in some cases, stoneware. Of the quality of the lead-lined plant, as produced in this country, I have been sceptical; if the material successfully resists attack by the acids which are in use, troubles are experienced in other directions when the plant is operating under vacuum, due, apparently, to the ineffective keying of the "homogeneous" lead lining to the steel. If there is no British source which can be relied upon, the prospective purchaser's only alternative is to go to the Continent for his requirements. It is the same with chemical stoneware. Here my own experience has been that the only reliable glaze is the brown-coloured salt glaze and not that sickly buff-coloured coating which is often applied to so-called chemical stoneware. Manufacturers of this material seem to rely too much upon their glaze for the desired quality of acid resistance and imperviousness, and do not give sufficient attention to the selection of the stoneware body which is used. The inevitable consequences are that once the glaze "breaks up" the plant becomes useless.

If there are British manufacturers of these materials who can support their claims this is the time for them to be heard, for even with the 10 per cent. *ad valorem* tariff now imposed on imported goods, I am not one alone who would unhesitatingly place my orders on the Continent in the knowledge that the goods supplied will give satisfactory service.—Yours faithfully,

"CHEMICAL MANUFACTURER."

[Our correspondent regrets that it is necessary for him to cover his identity by the use of a pseudonym, but any manufacturers' literature which is received by us will be passed on to him.—Ed. "C.A."]

Problems of Business Management

To the Editor of THE CHEMICAL AGE.

SIR,—Your issue of February 27 includes a report of a speech by Mr. W. A. S. Calder, an article by Mr. J. H. West, and two letters, dealing with the problems of business management. Reading them makes it evident that there is room for improvement in the chemical and chemical engineering industries. I should like to urge the salesmen, the sales office managers and the technicians of those industries to acquaint themselves more thoroughly with the rapid improvements now taking place in the science of industrial management.

The motto to-day is "Encourage the younger generations to take a greater part in national and industrial life." Now, sir, I suggest that when a chemist or an engineer wishes to take a greater part in his own particular science, he first of all engages in scientific study. A young chemist would not dream for a moment of spending thirty or forty years gaining "experience." He would know that scientific knowledge is the experience of others, systematised. So, too, in industry. There is a wealth of experience collected and systematised. The young industrialist must learn. There is a lot to learn about production, distribution and finance.

I cannot speak of all the teaching centres, but there are two institutions in London of which I have had experience. The Department of Industrial Administration of the Polytechnic (Regent Street), in conjunction with the Institute of Industrial Administration, runs an excellent series of lectures, suited to the ages of 20 to 45 and over; the subjects are many; the curriculum commonsense. No works chemist or engineer could fail to benefit by devoting one evening a week to such things as building and plant management; sales policy and

sales management; costing, business statistics, financial management; office methods and management; industrial psychology and personnel management, and so on.

Besides the Polytechnic lectures, there is the Business Research and Management Association of Great Britain. This body holds monthly meetings at which addresses are given and discussions take place of sound educational and practical value to every technician and executive. Membership is voluntary and I am sure the hon. secretary (H. A. Haylett, c/o Basil Butler Co., Ltd., Quality Court, Chancery Lane, W.C.2) would be pleased to send a card of invitation to the remaining meetings of this season. I enclose my card and regret my principals do not encourage us to write to the technical press over our own name.—Yours faithfully,

"SCIENCE IN MANAGEMENT."

New Technical Books

ANNUAL REPORTS OF THE PROGRESS OF APPLIED CHEMISTRY, 1931, Vol. XVI. Society of Chemical Industry. Pp. 748. Members, 7s. 6d.; non-members, 12s. 6d.

EDITED by T. F. Burton and indexed by F. G. Grosse, the sixteenth volume of this work represents a noteworthy addition to the literature of the Society of Chemical Industry, and affords clear evidence that whatever else was lacking during the year 1931 the study of chemical problems proceeded with unabated diligence. The various branches of chemical and chemical using activity are, as usual, reviewed by recognised specialists in their respective spheres, and the volume will rank as one of the standard works of reference in the industry. The subjects dealt with and the authors are as follows:—General, Plant and Machinery, R. E. V. Hampson and J. N. Vowler; Fuel, J. G. King; Gas, Carbonisation, Tar and Tar Products, H. Hollings and W. A. Moss; Mineral Oils, Alfred W. Nash and A. R. Bowen; Colouring Matters and Dyes, L. J. Hooley; Fibres, Textiles, Cellulose and Paper, V. E. Yarsley; Bleaching, Dyeing, Printing and Finishing, P. E. King; Acids, Alkalis and Salts, A. Proven; Glass, M. Parkin; Refractories, Ceramics and Cements, J. H. Chesters and W. J. Rees; Iron and Steel, A. L. Norbury and F. K. Neath; Non-ferrous Metals, Alan R. Powell; Electrochemical and Electro-Metallurgical Industries, H. T. S. Britton and R. A. Robinson; Oils, Fats and Waxes, E. R. Bolton and K. A. Williams; Paints, Pigments, Varnishes and Resins, members of the Oil and Colour Chemists' Association; Rubber, T. R. Dawson; Leather and Glue, W. R. Atkin; Soils and Fertilisers, E. M. Crowther; Sugar, Starches and Gums, J. P. Ogilvie; Fermentation Industries, H. Lloyd Hind and F. E. Day; Foods, G. D. Elsdon; Sanitation and Water Purification, A. Parker; Fine Chemicals, Medicinal Substances and Essential Oils, Edgar Stedman; Photographic Materials, A. Batley and E. E. Jolley.

* * *

THE LAW OF PATENTS FOR CHEMISTS. By Joseph Rossman, Washington, U.S.A.: The Inventors Publishing Co. Pp. 3004. \$3.50.

WITH the development of the American chemical industry, chemists, manufacturers and executives have been compelled to give greater consideration to patent matters affecting their work. This book has been prepared especially to meet their needs by giving a comprehensive, non-technical and accurate explanation of the essentials of chemical patent law which, previous to this, has not been available. It tells the chemist what to do when he makes an invention, how to legally safeguard his rights, what procedure to follow, what precautions to take, how to prepare and file the application, how letters patent are finally secured and then how to dispose or enforce the commercial patent rights, as well as many other vital patent matters. Helpful features of the book include a glossary which clearly explains patent law terms; a reproduction of a few typical chemical patents; an illustrative example of a complete chemical patent application; citations from important chemical suits; and information on searching patent literature and keeping to date with recent patents. The author, Dr. Joseph Rossman, is examiner of chemical inventions in the U.S. Patent Office, and thus has an intimate knowledge of patent law so far as America is concerned.

Taxation of Industry

F.B.I. Deputation to Somerset House

REPRESENTATIVES of the Federation of British Industries waited on the Chancellor's advisers at Somerset House last week, in order to discuss various matters relative to the taxation of industry. They thanked the Board for the concession with regard to the interpretation of "replacement" in connection with obsolescence allowance, but explained that in their view this did not go far enough, and that they were still of the opinion that obsolescence allowances should be granted whether plant had been replaced or not.

It was urged that accumulated losses of past years should be set off against profits before unsatisfied depreciation allowances were dealt with. It may be remembered that losses can only be carried forward against the profits of five succeeding years, not six years as many people were led to believe when the change over from the three years average first introduced the new system. It is felt that a change in the present system such as was requested would go a considerable way to meet the grievance. Representations were made with regard to the desirability of some allowance being granted in view of the wasting nature of patents. Patents have a definite and short life, and they were the subject of special recommendations by the Royal Commission on the Income Tax. These were the reasons given in support of the request.

The Federation's representatives urged that companies which had obtained relief under the provisions with regard to Dominion Income Tax relief should be at liberty to deduct from their preference dividends tax at the full British rate and not as at present at the British rate, as diminished by the Dominion Income Tax relief. The result of the present practice was that within limits the higher the Dominion rate of tax the more the preference shareholder gets at the expense of the ordinary shareholder. This anomaly did not arise in connection with Ireland, where a special agreement operated. It was also urged that co-operative societies should be taxed on exactly the same basis as other traders.

The Society of Public Analysts

Annual Meeting and Dinner

THE annual general meeting of the Society of Public Analysts was held at the Chemical Society's Rooms, Burlington House, London, on March 4, when Dr. J. T. Dunn delivered his presidential address. The following were elected as officers and council for 1932:—

President, F. W. F. Arnaud; past-presidents serving on the Council, E. R. Bolton, A. C. Chapman, J. T. Dunn, B. Dyer, E. Hinks, P. A. Ellis Richards, G. Rudd Thompson, and J. A. Voelcker; vice-presidents, H. M. Mason, G. W. Monier-Williams, and G. Stubbs; hon. treasurer, E. B. Hughes; hon. secretary, G. Roche Lynch; members of Council, A. L. Bacharach, H. E. Cox, E. M. Hawkins, A. E. Johnson, W. G. Messenger, H. H. Bagnall, W. T. Burgess, G. D. Elsdon, J. Evans, L. Eynon and J. R. Nicholls.

In the evening a dinner was held at the Trocadero Restaurant to celebrate the 50th anniversary of the foundation of the Society, Dr. J. T. Dunn presiding over an assembly of over 100 members and guests.

The PRESIDENT proposed the toast of the members of the Civil Service, and emphasised the harmonious relations which existed between those branches of the Civil Service which were intimately associated with the work of public analysts and agricultural analysts. He described the Civil Service as one of the great causes of the stability of this country and as the object of envy and respect of other nations.

The First Official Analysts

Sir ERNLEY BLACKWELL, replying, referred to the connection between the Home Office and the Society, and said that it was almost fifty years since the first two official analysts to the Home Office were appointed. He recalled the fact that one of the most distinguished of these analysts was the late Sir Thomas Stevenson, a former president of the Society.

Mr. A. T. A. DOBSON also replied to the toast, and expressed the hope that farmers would in the future avail themselves even more than in the past of the facilities provided

by the new Act to have their fertilisers and feeding stuffs examined by the official agricultural analysts.

Lord ATKIN, proposing the toast of the Society, expressed the view that definite standards should be fixed for foods, and in particular for milk, and that the onus should be upon the vendor to prove that the article sold conformed to that standard.

The toast was responded to by the President.

Mr. A. CHASTON CHAPMAN proposed the toast of the kindred societies, and pointed out how the various scientific societies, and particularly those connected with chemistry, were becoming more closely associated, owing to the way in which their work tended to overlap. Although he regarded this as a step in the right direction, he was of the opinion that each society should retain its individual entity.

Sir F. GOWLAND HOPKINS replied.

Mr. E. HINKS proposed the toast of the guests, the toast being acknowledged by the Lord Mayor of Newcastle and Mr. G. Gray.

New Members

At an ordinary meeting, preceding the annual meeting, certificates were read for the first time in favour of E. B. Anderson, E. F. Eaton, F. Maudsley, S. G. Stevenson, and J. W. Thom, and for the second time in favour of A. A. Comrie, E. W. S. Press, and Murial Roberts.

The following were elected members of the Society:—A. Green, J. F. Hardwick, E. S. Hawkins, J. R. Johnson, A. P. Laurie, and J. M. Tucker.

Chemical Matters in Parliament

Beet Sugar Production

IN the House of Commons, March 2, Viscountess Astor (Plymouth, Sutton) asked the Minister of Agriculture the average quantity of home-grown beet-root sugar produced per acre of beet during each of the years of the subsidy period?

Sir J. Gilmour: The following are the average quantities of beet sugar (all polarisations) produced per acre of beet in Great Britain in each manufacturing season during the subsidy period:—

Manufacturing Season.	Sugar produced per acre (lbs.)
1924-5	2,367
1925-6	2,063
1926-7	2,664
1927-8	1,846
1928-9	2,503
1929-30	2,838
1930-1	2,724
1931-2 (provisional)	2,410

Viscountess Astor then asked the amount of raw sugar produced in Britain for each year since 1923.

Sir J. Gilmour: The following are the approximate quantities of raw sugar produced in Great Britain in each beet-sugar manufacturing season during the subsidy period:—

Manufacturing Season.	Raw Sugar Produced (tons).
1925-6	6,200
1926-7	17,900
1927-8	23,300
1928-9	40,700
1929-30	103,700
1930-1	177,700
1931-2 (provisional)	129,300

Beet Sugar Subsidy

On Monday, March 7, Colonel Sir James Reynolds (Liverpool, Exchange) asked the Minister of Agriculture if he will state how much of the assistance granted to the beet-sugar industry by means of direct subsidy on sugar and molasses and by remission of excise duty has been retained by the beet-sugar factories for profits, reserves, and depreciation since the commencement of the subsidy.

Sir J. Gilmour: The balance-sheets of the factories show that from the commencement of operations under the British Sugar (Subsidy) Act, 1925, up to March 31, 1931, the sums placed to reserve, applied to depreciation, distributed as dividends and retained as unappropriated balances amounted to about £6,500,000.

From Week to Week

SIR WILLIAM J. POPE has been elected chairman of the Council of the City and Guilds of London Institute in succession to the late Mr. Morton Latham.

A NEW BY-PRODUCT PLANT is to be laid down at Newmains, Lanarkshire, by a firm which is presently engaged amalgamating gas concerns in Lanarkshire and the Lothians.

THE RAPID DEVELOPMENT OF TRACTION by internal combustion engines using oil fuel was stressed by Mr. Alan E. L. Chorlton in the course of the first of the Cantor Lectures before the Royal Society of Arts on Monday, March 7.

BROWN & CO. (GLASGOW), LTD., of Johnstone, are shortly to place "Ozodine," or powdered seaweed on the market. By an entirely new method of dehydration all the moisture is removed from the weed, which is then powdered. The weed is being cut whilst alive off the Orkney coast.

A FIRE BROKE OUT at Chadwick Tar-Mac Works, near Newbridge Quarries, Pickering, on February 29, when over 10 tons of tar were involved. Owing to the heat a large number of barrels of tar burst open. As a strong wind was blowing the flames away from the works, plant to the value of £10,000 escaped damage.

DR. ROBERT SALMON HUTTON, director of the British Non-ferrous Metals Research Association, has been elected to the Goldsmiths' Professorship of Metallurgy at Cambridge University from July 1 of this year. Professor Hutton, who was born in 1878, is the son of Mr. E. J. Hutton, of London and Sheffield. He was educated at Owen's College, Manchester, Leipzig and Paris.

IN A CIRCULAR TO ITS SHAREHOLDERS, the director of the British Cyanides Co. state that the improvement in the business of the company and its subsidiaries, forecast at the annual general meeting, has been fully realised. For the six months ended December last the accounts of the group as a whole show a balance of profit considerably in excess of the profit for the previous twelve months, after writing off out of revenue all expenditure on research, development and advertising.

A NEW CANADIAN COMPANY has been formed with the title of National Silicates, Ltd., for the purpose of devoting its attention to the marketing of sodium silicate in its various forms and the servicing of the silicate-using industries. This company brings together on its board of directors persons already well-known in the production and distribution of sodium silicate, including Mr. T. W. Elkington as president, a member of the family corporation, Philadelphia Quartz Co., Inc., which came into being as a partnership in 1854, and which was established by Joseph Elkington in 1831.

A POINT OF INTEREST TO THE CHEMICAL INDUSTRY in connection with the Import Duties Act is that there will be no preference in the case of Palestine. Under a clause in the Covenant of the League of Nations, Palestine is regarded as a foreign nation so far as commercial activities are concerned. The United Kingdom mandate concerns only the internal peace and well-being of the country, and Great Britain cannot grant to Palestine any preference which is denied to other foreign countries with which it has commercial treaties. Orders in Council issued by the Board of Trade giving preference to mandated territories will therefore not apply to Palestine.

A MEMORIAL TO THE LATE LORD MELCHETT was unveiled on Monday by Lady Maud Hoare at the Violet Melchett Infant Welfare Centre, Chelsea. The memorial is a plaque bearing a portrait of Lord Melchett, with a panel on either side, fitted into a structural beam immediately above the platform in the council room. The wording on the left-hand panel reads:—"In memory of Alfred, Baron Melchett, of Landford, who in the last year of his life conceived and gave this Welfare Centre. He saw the laying of the foundation stone, but died before the opening." The right-hand panel reads:—"Her Majesty Queen Mary opened this building March 26, 1931." Lady Hoare, before unveiling the memorial, said it was the cast of the bas-relief executed by Mr. Jagger for Lord Melchett's mausoleum. Mr. Jagger had generously presented the cast.

DR. SIMONSEN, head of the Chemistry Department of the University College of North Wales, has been recommended for the Fellowship of the Royal Society.

A TOTAL LOSS OF 13,415,000 marks is reported by Krupps for the year ended September 30 last. Of this sum 9,000,000 marks are covered from reserves, the remainder being carried forward.

RECENT WILLS include:—Mr. Robert Turner, of Denehurst, Rochdale Lanes., formerly chairman of Turner and Newall, Ltd., and Samuel Turner and Co., of Rochdale, who died on December 5, £662,778. Mr. Arch Knox, analytical chemist, 75 Ingleby Drive, Dennistoun, Glasgow, £549.

OWING TO AN INCREASED DEMAND FOR FERTILISERS during the last week or two, Imperial Chemical Industries, Ltd., has restarted some of the idle plant at Billingham. Already 200 men have been engaged. It is stated the amount of plant at present in operation will be increased again at a later date.

AT A GENERAL MEETING of the members of the Royal Institution on Monday, Sir Robert Robertson, treasurer and vice-president, presiding, Mr. J. W. Alderson, Mr. G. P. V. Aylmer, Mrs. G. T. Baldwin, Miss Sheila Beddington, Mrs. Cloudesley-Brereton, Mrs. H. Thornton Ellis, Dr. Friedrich Hall, Lady Simpson, Mr. A. I. Steven, Miss Mary W. Sutton and Mr. W. G. Wilsher were elected members.

THE FOURTEENTH ANNUAL DINNER of the Oil and Colour Chemists' Association will be held on Friday, April 1, at the Connaught Rooms, Great Queen Street, London, W.C.2. The principal guest of the evening will be Professor Sir William Rothenstein, of the Royal College of Art. The dinner will be followed by a dance. Members desiring tickets (12s. 6d. each, exclusive of wines) should make early application to the general secretary of the Association.

AT A MEETING OF THE BRISTOL section of the Society of the Chemical Industry last week, an address on commercial explosives was given by Dr. W. Cullen. He pointed out that explosives manufacture was one of the real key industries, for explosives were just as necessary in peace as in war. Without explosives our great basic industries could not exist, docks and harbours could not be built; there would be little or no gold, for to-day it was all obtained by mining operations and generally speaking the present-day civilisation would come to an end.

INDUSTRIAL DISEASES AND WORKMEN'S COMPENSATION were discussed at an area conference under the auspices of the General Council of the Trade Union Congress at Swansea on Saturday, March 5. The principal speaker was Sir Thomas Legge, lecturer on factory hygiene at Manchester University. Sir Thomas, in his address, dealt with pitch cancer, iron-workers' cataract, miners' nystagmus, silicosis and dermatitis. In his reference to pitch cancer he emphasised that early treatment was essential, otherwise it would prove fatal. In his outline of silicosis he explained how the "Hay dust trap" prevented the incidence of the disease. Dealing with dermatitis from oil among engineers, from alkalis in dyeing, from turpentine among painters and from dough among bakers, Sir Thomas said that the washing and well-drying of the hands and the application of a simple ointment, such as cold cream or equal parts of lanoline and vaseline, was the best preventative.

Obituary

MR. ARTHUR JONES, managing director of the General Rubber Co., Ltd., London, and one of the original members of the Rubber Trade Association, aged 54. Mr. Jones was last year elected president of the General Rubber Co., of New York, and of its Eastern branches at Singapore and Penang.

DR. MAX FREMERY, vice president of the Vereinigte Glanzstoff Werke, of Elberfeld, the biggest concern of its kind in Germany. Dr. Fremery was one of the pioneers of the artificial silk industry, and, in fact, the first in Germany to produce the so-called "viscose" silk. His experiments at the Oberbruch incandescent gas mantle works of Aix-la-Chapelle date back to 1890.

PERCY SOUTHARD COURT, of 10 Westmount Road, Eltham, Kent, late secretary to the Castner Kellner Alkali Co., Ltd., aged 72.

Patent Literature

The following information is prepared from published Patent Specifications and from the Illustrated Official Journal (Patents) by permission of the Controller to H.M. Stationery Office. Printed copies of full Patent Specifications accepted may be obtained from the Patent Office, 25, Southampton Buildings, London, W.C.2. at 1s. each.

Applications for Patents

[In the case of applications for patents under the International Convention, the priority date (that is, the original application date abroad which the applicant desires shall be accorded to the patent) is given in brackets, with the name of the country of origin. Specifications of such applications are open to inspection at the Patent Office on the anniversary of the date given in brackets, whether or not they have been accepted.]

- Bleachers' Association, Ltd., Farrington, F., Parker, C. S., and Wall, C. L. Dyeing with vat dyestuffs. 6406. March 3.
Compagnie de Bethune. Cyclopentenylactic acids. 6465. March 3. (France, March 6, '31.)
Du Pont de Nemours & Co., E. I. Carrying out chemical reactions. 6088. February 29. (United States, February 28, '31.)
Haddan, R. (Federal Phosphorus Co.). Manufacture of mixtures of sodium phosphates for treating boiler waters &c. 6601. March 4.
I. G. Farbenindustrie Akt.-Ges. Purification of gases from roasting processes. 6081. February 29. (Germany, May 1, '31.)
— Manufacture of condensation products. 6452. March 3. (Germany, March 4, '31.)
— Manufacture of ribbons. 6453. March 3. (Germany, March 4, '31.)
— Manufacture of α -phenyl ethylene β -halogen hydrins. 6728. March 5. (Germany, May 13, '31.)
— Isolating α -phenyl ethylene β -dichloride. 6729. March 5. (Germany, May 13, '31.)
Imperial Chemical Industries, Ltd. Manufacture of thermoplastic resinous materials. 6087. February 29.
— Baldwin, A. W., and McGlynn, R. P. Sulphur-containing salt-forming compounds. 6089. February 29.
— Artificial composite fuels. 6487. March 3.
— and Lodge, F. Anthraquinone derivatives. 6625. March 4.
Johnson, J. Y. (I. G. Farbenindustrie Akt.-Ges.). Manufacture of hydrocarbons from isobutylene. 6444. March 3.
— Treatment of fibrous materials with aqueous baths. 6445. March 3. (November 14, '30.)
— Manufacture of candles. 6568. March 4.
— Lubricating oils. 6569. March 4.
Kali-Forschungs-Anstalt Ges. Converting fertiliser salts &c into storable &c. form. 6041. February 29. (Germany, October 6, '31.)
— Production of potassium nitrate. 6042. February 29. (Germany, September 1, '31.)
— Recovery of bromine and bromine compounds. 6201. March 1. (Germany, December 17, '31.)
— Production of mixed fertilisers. 6322. March 2. (Germany, November 21, '31.)
Kippe, O. (Klöckner-Werke Akt.-Ges.). Manufacture of calcium nitrate from dolomite, &c. 6571. March 4.
Mond, A. L. (I. G. Farbenindustrie Akt.-Ges.). Production of double fluorides of aluminium and alkalis. 6371. March 2.
Morgan, G. T., and Pettet, A. E. J. Purification and decolorisation of phenols &c. 6058. February 29.
Roessler & Hasslacher Chemical Co. Stabilisation of chlorinated hydrocarbons. 6434, 6435. March 3. (United States, March 3, '31.)
Soc. of Chemical Industry in Basle. Manufacture of double compounds of the pyridine series. 6711. March 5. (Switzerland, March 7, '31.)
Spence & Sons, Ltd., P. Treatment of aluminous materials. 5998. February 29.

Specifications Accepted with Date of Application

- 268,343. Purification of gas mixtures containing ammonia and hydrogen sulphide. J. Y. Johnson. (I. G. Farbenindustrie Akt.-Ges.). October 15, 1930.
367,346. Smelting of ores and other similar operations. A. G. McGregor. November 11, 1930.
367,352. Condensation products containing nitrogen. Manufacture of. J. Y. Johnson. (I. G. Farbenindustrie Akt.-Ges.). September 8, 1930.
367,353. Mono-alkyl ethers of glycol and its homologues. Production of. Anglo-Persian Oil Co., Ltd., S. F. Birch, and W. D. Scott. October 17, 1930.
367,381. Contact process for preparing sulphuric acid. Imperial Chemical Industries, Ltd., F. A. F. Crawford, and W. A. P. Challoner. August 19, 1930.
367,384. Refining of copper and other metals. A. G. McGregor. November 11, 1930.
367,389. Dyestuffs soluble in water. Manufacture of. W. W. Groves. (I. G. Farbenindustrie Akt.-Ges.). November 17, 1930.
367,416. Derivatives of polymerised styrenes. Manufacture of. J. Y.

- Johnson. (I. G. Farbenindustrie Akt.-Ges.). November 13.
367,460. Electrolytic process for the production of metallic compounds of low solubility. R. Nadal Ramon. May 12, 1931.
367,462. Benzanthrone derivatives. Production of. R. F. Thomson, I. B. Anderson, S. Thornley and Imperial Chemical Industries, Ltd. August 25, 1930.
367,481. Carbonyls of molybdenum and tungsten. Manufacture of. J. Y. Johnson. (I. G. Farbenindustrie Akt.-Ges.). December 3, 1930.
367,494. Preserving rubber. Methods of—and products obtained thereby. Goodyear Tire and Rubber Co. January 16, 1930.
367,513. Soap and glycerine. Manufacture of. J. B. E. Johnson. January 7, 1931.
367,524. Leucite and other alkali aluminium silicates. Treatment of—with nitric acid. G. A. Blanc. January 20, 1931.
367,525. Aluminium oxide. Production of—from aluminium nitrate in which the decomposition of nitric acid is reduced to a minimum. G. A. Blanc. January 20, 1931.
367,545. Conversion products of higher paraffin hydrocarbons. Manufacture of. A. Carpmal. (I. G. Farbenindustrie Akt.-Ges.). February 6, 1931. Addition to 343,948.
360,571. Nickel-tin alloys. Vereinigte Stahlwerke Akt.-Ges. July 4, 1930.
367,582. Base-exchange bodies. Manufacture of. W. W. Groves. (I. G. Farbenindustrie Akt.-Ges.). March 9, 1931.
367,597. Hydroxy-benzo-carbazole-carboxylic acids. Manufacture of. I. G. Farbenindustrie Akt.-Ges. March 19, 1930.
367,585. Ester-like wetting agents, foaming agents, and dispersing agents. Manufacture of. I. G. Farbenindustrie Akt.-Ges. October 20, 1930. Addition to 327,870.
367,598. Alkali carbon briquettes in or for the manufacture of alkali cyanamides or cyanides. Production of. A. Mentzel. April 14, 1930.
367,654. Calcium chloride. Manufacture of. Lavender Bros. & Co. (Dehydrations), Ltd., and A. E. Sherman. May 19, 1931.
367,660. Ammonium nitrate. Production of. Montecatini Soc. Generale per l'Industria Mineraria ed Agricola. June 2, 1930.
367,666. Naphthenates of heavy and alkaline earth metals. Production of. I. G. Farbenindustrie Akt.-Ges. June 2, 1930. Addition to 335,863.
367,680. Alkyl-esters of carboxylic acids. Manufacture of. I. G. Farbenindustrie Akt.-Ges. June 16, 1930.
367,690. Phosphorus pentoxide and phosphoric acid. Manufacture of. W. J. Tennant. (Victor Chemical Works.) June 23, 1931.
367,708. 2-oxyacetic acid-benzimidazole-arsonic acids. Manufacture of. I. G. Farbenindustrie Akt.-Ges. June 22, 1930.
367,709. Nitric acid. Manufacture of—by oxidation of ammonia. F. A. F. Pallemas, and Union Chimique Belge Soc. Anon. July 23, 1931. Addition to 6169/31.
367,728. Cracking hydrocarbons. Process for. Naamloze Vennootschap Nieuwe Oetroot Maatschappij. September 9, 1930.

Dundee as a Site for Factories

DUNDEE and its encouragement for new industries to establish themselves within its borders is dealt with in detail in an elaborately produced volume which is being distributed by the Development Committee of the city. Among the points considered are situation, raw materials, power, electrical services, gas services, fuel, water supply, labour, housing and transport, rates and taxes, post facilities, transport costs, etc. A summary of manufactures at present carried on in Dundee reveals that no less than 150 different industries are in operation, and there is scarcely a process which has not its supply of intelligent labour readily available. Beyond the assurance of technical skill there is the fact of the amazing integrity and honesty of the average worker, as statistics of the Municipal Housing Department for payment of rent and rates during 1930-31 show that out of a total rent charge of £122,352 the arrears amounted to only 3.39 per cent. In regard to transport it is pointed out that there exist ample facilities by various motor haulage contractors for transporting goods to all parts of the country even as far south as Liverpool or as far north as Thurso. All docks and wharves at Dundee harbour are equipped with very extensive shed accommodation and are linked up with the main line of the L.M.S. and L.N.E. Railways. The Development Officer will place at the disposal of those interested full particulars of the available organisation for handling any specific form of traffic or merchandise. Copies of this booklet are obtainable on application to the Town Clerk, Dundee.

The Institute of Metals

Twenty-fourth Annual Meeting

THE twenty-fourth annual general meeting of the Institute of Metals was held in London on March 9 and 10, when the retiring president, Dr. R. Seligman, inducted the incoming president, Sir Henry Fowler, into the chair. The Council's report again recorded an increase of membership—this time almost double the increase achieved in 1930—bringing the total up to the record figure of 2,232. One feature of this increased membership, which is particularly gratifying at such a time as the present, is that a number of firms, not directly interested in the work of the Institute, have recognised the indirect benefits accruing to them from its activities, and have encouraged members of their technical and other staffs to apply for membership.

Three general meetings were held during the year—one that was particularly notable in that it witnessed the first autumn meeting of the Institute to take place in Switzerland. The disturbed financial and economic conditions prevailing in Europe and America made it necessary for the Council to postpone the American meeting, which was to have been held jointly with the Iron and Steel Institute. Interest in the work of the six local sections was stimulated as a result of the issue of the new monthly Journal, in which there had been published, in advance of each local section meeting, a synopsis of the paper to be presented, this being followed, after the paper had been read, by a summary of the paper and any discussion thereon. Attention was directed to the increasing use that had been made of the library facilities.

The SECRETARY announced that the Council for the year 1932 had been elected as follows:—President, Sir Henry Fowler; past-presidents, Professor Sir Harold C. H. Carpenter, Sir John Dewrance, Dr. W. Rosenhain, Dr. R. Seligman, Mr. L. Sumner, and Professor T. Turner; vice-presidents: Mr. W. R. Barclay (London), Dr. A. G. C. Gwyer (Warrington), Professor D. Hanson, D.Sc. (Birmingham), Dr. R. S. Hutton (London), Dr. H. Moore (London), and Engineer Vice-Admiral Sir Reginald W. Skelton (London); hon. treasurer, Mr. J. Fry (London); Council: Dr. H. W. Brownson (Birmingham), Dr. C. H. Desch, D.Sc., Ph.D., F.R.S. (Teddington), Mr. Maurice S. Gibb, C.B.E., J.P. (West Hartlepool), Mr. R. Lloyd Gibbin (Birmingham), Mr. H. H. A. Greer, J.P. (Glasgow), Mr. W. T. Griffiths, M.Sc., F.I.C. (representing the local sections), Dr. J. L. Haughton, D.Sc. (Teddington), Messrs. Wesley Lambert, C.B.E., A.K.C. (London), H. C. Lancaster (London), E. L. Morcom, M.A. (Birmingham), A. H. Munday (London), A. J. G. Smout (Birmingham), James Steven (Glasgow), F. Tomlinson (Manchester), W. G. Turner, O.B.E. (Sheffield), and H. B. Weeks, F.I.C. (London).

International Atomic Weights for 1932

THE second Report of the Committee on Atomic Weights of the International Union of Chemistry has now been published and copies may be obtained from the offices of the Union, 49 Rue des Mathurins, Paris. This Report covers all atomic weight investigations published in the period February-October, 1931; future reports will cover a twelve months period. The following changes in the table of atomic weights are recommended: Kr to be 83.7 instead of 82.9, and Xe to be 131.3 instead of 130.2. Authors of papers bearing on this subject are requested to send copies to each of the five members of the committee at the earliest possible moment. The members of the Committee are:—Professor G. P. Baxter, Coolidge Laboratory, Harvard University, Cambridge, Mass., U.S.A.; Mme Professor P. Curie, Institut du Radium, 1 rue Pierre Curie, Paris V^e, France; Professor O. Hönigsschmid, Arcisstrasse 1, Munich, Germany; Professor P. Lebeau, Faculté de Pharmacie, 4 Avenue de l'Observatoire, Paris VI^e, France; Professor R. J. Meyer, Meinekestrasse 8, Berlin W.15, Germany.

Synthetic Methanol in Italy

THE process of the "Società Italiana Ricerche Industriali" has been installed on an industrial scale at the "S.I.R.I." plant at Terni and in the Nera Montoro plant of the "Terni" company, having daily capacities of 10 and 20 tons, respectively. The Casale Co. is understood to have arranged with the S.I.R.I. for licensing its synthetic methanol process.

Points from Manufacturers' Literature

The Editor welcomes copies of new brochures and leaflets describing plant, equipment and products of interest to chemical manufacturers and the chemical using trades.

SYPHONS, CARBOY POURERS AND TIPLERS in great variety are illustrated in an interesting brochure which is being distributed by Harry Heymann, Ltd., of 5 Union Street, Bradford. Some of the devices shown are very ingenious, as, for instance, the "Express" cask and drum emptier, which is inserted into the bung hole and fastened with a strong screw which makes it air-tight. This is especially designed for use in emptying barrels of heavy oil or liquors of similar density which cannot be conveniently handled by the use of a syphon or a pump; it also seems to be unrivalled for drawing samples in place of plunge syphons, and for emptying casks which are too full. Casks are claimed to be emptied in an exceptionally short time, or about twice as fast as by pumping. There are also self-priming syphons in which the liquid does not come into contact with the rubber priming device; safety carboy emptiers set in operation by a few movements of a small hand pump; and cask emptiers by means of which drums lying on the floor can be quickly and completely emptied by air pressure created by the operation of a foot pump.

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SOLVENTS AND PLASTICISERS covering a wide range of properties are described in detail in a booklet which is issued by Howards and Sons, Ltd., of Ilford, Essex. Included in this range are Sextone (cyclohexanone), Sextone B (methylcyclohexanone), Sexton B with a ketone content of 96/100 per cent., cyclohexanol acetate, Sextate (methylcyclohexanolacetate), diacetone alcohol, ethyl lactate, cyclohexanol oxalate, Barkite (methyl cyclohexanol oxalate), Sextol methylcyclohexanol and cyclohexanol. Sextone is used both in spraying and in brushing lacquers. It has a relatively low rate of evaporation and produces lacquers having good flow and giving clear, smooth, glossy, tough and strongly adhesive films. It gives excellent blush resistance and, in lacquers containing it, it is unnecessary to incorporate butyl alcohol or a high boiling ester for this purpose. If it is desired to speed up the evaporation rate of this solvent when used in a spraying lacquer, this can easily be done, and to a considerable extent, by the addition of low boiling diluents, since Sextone has an extremely high dilution ratio for coal-tar hydrocarbons. This dilution ratio is 7.25 with respect to toluene and xylene and 6.5 to benzene, which are higher dilution ratios than those of any other lacquer solvent. Sextone is a particularly effective solvent for blending nitrocellulose and resins in lacquers and, unlike certain nitrocellulose solvents which are poor solvents for resins, does not need the assistance of a special resin solvent. In the few cases where resins, e.g., Kauri, although readily soluble in Sextone yet give cloudy films with certain proportions of nitrocellulose, addition of Sextol or cyclohexanol will produce a clear film. Another most valuable property of Sextone is that it is a solvent for both spirit-soluble and hydrocarbon-soluble resins. Barkite is used as a plasticiser in nitrocellulose lacquers and for nitrocellulose films and sheets. It is a good solvent for nitrocellulose and has a higher dilution ratio with respect to toluene than any other plasticiser now on the market; its dilution ratios for toluene xylene and petrol are far higher than those of tricresyl phosphate.

* * *

THE FOAMITE CONTINUOUS FOAM GENERATOR as featured in a brochure issued by Foamite Fireform, Ltd., of 55-57 Great Marlborough Street, London, W.1, can be connected to the fire main or other water service pipe, when firefoam is delivered at the point of application so long as the special fireform powder is poured into the hopper. The water requirement is 50 gallons per minute at a minimum pressure of 35 lb. per sq. inch, when 500 gallons of firefoam are produced per minute. When the Foamite generator equipment is installed for the protection of an extended area, it is usually desirable that arrangements should be made so that it may at all times be ready against an emergency. Special trailers are therefore designed which carry the generator, delivery hose and sufficient powder to enable operations to be commenced without delay.

Weekly Prices of British Chemical Products

The following notes on the chemical market conditions in Great Britain are based on direct information supplied by the British manufacturers concerned, and unless otherwise qualified the figures quoted apply to fair quantities, net and naked at makers' works. Where no locality is indicated, the prices are general for the United Kingdom. Particulars of the London chemical market are specially supplied to THE CHEMICAL AGE by R. W. Greoff and Co., Ltd., and Chas. Page and Co., Ltd., and those of the Scottish chemical market are specially supplied by Chas. Tennant and Co., Ltd., and may be accepted as representing these firms' independent and impartial opinions.

THE London chemical market remains firm, with a fair average amount of business being placed. There has been no change in the coal tar products market, which remains quiet. Prices still hold firm. Our special Manchester correspondent reports that firmness continues to characterise virtually every section of the chemical market there, and the upward movement in several lines has continued during the past week. The general expectation is that in a number of other products additional price advances in consequence of the general tariff will be witnessed before long. Meanwhile, business in imported chemicals in this centre has quietened down appreciably, most of the principal users in the area having bought fairly extensively during the last month or two. Whilst new buying generally is only on a moderate scale the call for deliveries against old contracts is not unsatisfactory. The Scottish heavy chemical market shows little or no change. Considerable attention continues to be devoted to the heavy coal tar products which are, however, rather scarce. Pitch is almost unobtainable for shipment while refined tar for road making is more or less being rationed. Ordinary cresylic acid remains a dull market.

General Heavy Chemicals

ACETATE OF LIME.—MANCHESTER: Brown, £8 per ton; grey, £12 to £12 10s.
ACETONE.—LONDON: £65 to £68 per ton; SCOTLAND: £66 to £68 ex wharf, according to quantity.
ACID, ACETIC.—Tech. 40%, £19 15s. per ton d/d address U.K. in casks. LONDON: Tech. 80%, £37 5s.; pure 80%, £38 5s.; 60%, £28 10s.; tech. 40%, £19 15s. SCOTLAND: Glacial 98 100%, £48 to £50; pure 80%, £38 5s.; technical 80%, £37 5s. d/d buyers' premises Great Britain. MANCHESTER: 80% commercial, £30; tech. glacial, £52.
ACID, BORIC.—SCOTLAND: Granulated commercial, £26 10s. per ton; B.P. crystals, £35 10s.; B.P. powder, £36 10s. in 1-cwt. bags d/d free Great Britain in one-ton lots upwards.
ACID, CHROMIC.—11d. per lb., less 2½% d/d U.K.
ACID, CITRIC.—LONDON: 1s. 1d. to 1s. 2d. per lb., less 5%. MANCHESTER: 1s. 2½d.
ACID, FORMIC.—LONDON: £51 to £52 per ton.
ACID, HYDROCHLORIC.—Spot, 3s. 6d. to 6s. carboy d/d according to purity, strength and locality. SCOTLAND: Arsenical quality, 4s.; dearsenicated, 5s. ex works, full wagon loads.
ACID, LACTIC.—LANCASHIRE: Dark tech., 50% by vol., £23 10s. per ton; 50% by weight, £27 10s.; pale tech., 50% by vol., £27; 50% by weight, £32; 80% by weight, £45; edible, 50% by vol., £40. One-ton lots ex works, barrels free.
ACID, NITRIC.—80° Tw. spot, £20 to £25 per ton makers' works, according to district and quality. SCOTLAND: 80°, £23 ex station full truck loads.
ACID, OXALIC.—LONDON: £50 per ton in casks, £51 10s. in kegs, *£52 in casks d/d. SCOTLAND: 98 100%, £50 to £53 ex store. MANCHESTER: £2 10s. to £2 12s. 6d. per cwt., ex store.
ACID, SULPHURIC.—Average prices f.o.r. British makers' works, with slight variations owing to local considerations: 140° Tw. crude acid, £3 per ton; 168° Tw. arsenical £5 10s.; 168° Tw. non-arsenical, £6 15s. SCOTLAND: 144° quality, £3 12s. 6d.; 168°, £7; dearsenicated, 20s. per ton-extra.
ACID, TARTARIC.—LONDON: 1s. 1½d. to 1s. 2½d. per lb., less 5%. SCOTLAND: B.P. crystals, 1s. 1½d. to 1s. 1½d. less 5% carriage paid. MANCHESTER: 1s. 1½d. to 1s. 2d.
ALUM.—SCOTLAND: Lump potash, £9 per ton ex store.
ALUMINA SULPHATE.—LONDON: £8 15s. to £9 10s. per ton according to quality and quantity. *£8 10s. SCOTLAND: £8 to £8 10s. ex store.
AMMONIA, ANHYDROUS.—Spot, 10d. per lb. d/d in cylinders. SCOTLAND: 10s. to 1s. containers extra and returnable.
AMMONIA, LIQUID.—SCOTLAND: 80°, 2½d. to 3d. per lb. d/d, according to quantity.
AMMONIUM CARBONATE.—SCOTLAND: Lump, £36 per ton; powdered, £38, packed in 5-cwt. casks d/d U.K. stations or f.o.b. U.K. ports.
AMMONIUM CHLORIDE.—£37 to £45 per ton, carriage paid. LONDON: Fine white crystals, £10 to £20. (See also Salammianic.)
AMMONIUM CHLORIDE (MURIATE).—SCOTLAND: British dog tooth crystals, £32 to £35 per ton, carriage paid according to quantity. (See also Salammianic.)
AMMONIUM BICHRIMATE.—8d. per lb. d/d U.K.

ANTIMONY OXIDE.—SCOTLAND: Spot £29 per ton, c.i.f. U.K. ports.
ANTIMONY SULPHIDE.—Golden 6½d. to 1s. 1½d. per lb.; crimson, 1s. 4d. to 1s. 6d. per lb. according to quality.
ARSENIC.—LONDON: £24 10s. c.i.f. main U.K. ports for imported material; Cornish nominal, £26 10s. f.o.r. mines. SCOTLAND: White powdered £27 ex wharf; spot, £28 10s. ex store. MANCHESTER: White powdered Cornish, £26 at mines.
ARSENIC SULPHIDE.—Yellow 1s. 6d. to 1s. 8d. per lb.
BARYTES.—£7 10s. to £9 per ton according to quality.
BARIUM CHLORIDE.—LONDON: £11 10s. per ton. SCOTLAND: £11 5s. in casks, ex store.
BISULPHIDE OF LIME.—£7 10s. per ton f.o.r. London, packages free.
BLEACHING POWDER.—Spot 35/37% £7 19s. per ton d/d station in casks, special terms for contract. SCOTLAND: £8 15s. in 5s. 6d. cwt. casks.
BORAX, COMMERCIAL.—Granulated £15 10s. per ton, powder £17, packed in 1-cwt. bags, carriage paid any station Great Britain. Prices are for 1-ton lots and upwards.
CADMIUM SULPHIDE.—3s. 6d. to 3s. 9d. per lb.
CALCIUM CHLORIDE.—Solid 70/75% spot £5 5s. to £5 15s. per ton d/d station in drums. SCOTLAND: £5 5s. to £5 15s., according to quantity and point of delivery.
CARBON BISULPHIDE.—£30 to £32 per ton, drums extra.
CARBON BLACK.—4d. to 5d. per lb. ex wharf.
CARBON TETRACHLORIDE.—£45 to £55 per ton, drums extra.
CHROMIUM OXIDE.—10d. to 10½d. per lb. according to quantity d/d U.K. Green 1s. 2d. per lb.
CHROMETAN.—Crystals 3½d. per lb. Liquor £19 10s. per ton d/d U.K.
COPPERAS GREEN.—SCOTLAND: £3 15s. per ton, f.o.r., or ex works.
CREAM OF TARTAR.—LONDON: £5 7s. 6d. per cwt.
DIPHENYLGUANIDINE.—2s. 6d. per lb.
FORMALDEHYDE.—LONDON: 28s. 6d. to 30s. 6d. per cwt. SCOTLAND: 40%, £28 per ton ex store.
HYDROGEN PEROXIDE.—LONDON: *100 vols. 10d. per lb.
INDIARUBBER SUBSTITUTES.—White, 4d. to 5½d. per lb.; Dark, 4d. to 4½d.
LAMPBLACK.—£46 to £50 per ton.
LEAD ACETATE.—LONDON: White £42 to £44 per ton. Brown £1 per ton less. *£43 and £42 respectively ex wharf London. SCOTLAND: White Crystals £42 to £44 c.i.f. U.K. ports. Brown £1 per ton less. MANCHESTER: White, £42; Brown, £40.
LEAD NITRATE.—MANCHESTER: £29 per ton.
LEAD, RED.—SCOTLAND: £30 per ton d/d buyer's works.
LEAD, WHITE.—SCOTLAND: £40 per ton carriage paid.
LITHOPONE.—30%, £20 to £22 per ton. LONDON: £20 to £22.
MAGNESITE.—SCOTLAND: Ground Calcined £9 per ton ex store.
METHYLATED SPIRIT.—61 O.P. Industrial 1s. 8d. to 2s. 3d. gal. Pyridinised Industrial, 1s. 10d. to 2s. 5d. Mineralised, 2s. 9d. to 3s. 3d. 64 O.P. 1d. extra in all cases. Prices according to quantities. SCOTLAND: Industrial quality 64 O.P., 1s. 8d. to 2s. 3d.
NICKEL AMMONIA SULPHATE.—£38 per ton d/d.
NICKEL SULPHATE.—£38 per ton d/d.
PHENOL.—LONDON: *Official price, 5½d. to 6½d. per lb.; in some directions higher prices are being asked and obtained.
PIPERIDINE RUBBER ACCELERATORS.—P.P.D., 10s. 6d. to 11s. 6d.; Z.P.D., 7s. to 7s. 6d.; L.P.D., 6s. 6d. to 7s.; P.T.D., 8s. 8d. to 10s. 4d.; C.P.D., 8s. 3d. to 8s. 10d. S.P.D., 8s. 1d. to 8s. 7d. Superac Standard 7s. Superac Z 3s. 6d.
POTASH CAUSTIC.—£30 to £35 per ton. LONDON: £38 to £40. MANCHESTER: £39 to £40.
POTASSIUM BICHRIMATE.—Crystals and Granular, 5d. per lb. net d/d U.K. Discount according to quality. Ground, 5½d. LONDON: 5d. per lb. with usual discounts for contracts. SCOTLAND: 5d. d/d U.K. or c.i.f. Irish Ports with allowance for contracts. MANCHESTER: 5d.
POTASSIUM CARBONATE.—SCOTLAND: 96/98% spot £28 per ton ex store. LONDON: £32 to £33 10s. MANCHESTER: £31.
POTASSIUM CHLORATE.—3½d. per lb. export London in 1-cwt. kegs. LONDON: £34 to £36 per ton, *£37. SCOTLAND: 99½/100% powder, £34. MANCHESTER: £35.
POTASSIUM CHROMATE.—6½d. per lb. d/d U.K.
POTASSIUM NITRATE.—SCOTLAND: Refined Granulated £28 per ton c.i.f. U.K. ports. Spot £30 per ton ex store.
POTASSIUM PERMANGANATE.—LONDON: 8d. to 8½d. per lb. SCOTLAND: B.P. crystals, 8½d. MANCHESTER: Commercial, 8d.; B.P., 8½d.
POTASSIUM PRUSSIAN.—LONDON: 8½d. per lb. SCOTLAND: Yellow spot material, 8½d. ex store. MANCHESTER: Yellow, 8½d.

* Prices quoted by other manufacturers.

SALAMMONIAC.—First lump spot, £42 17s. 6d. per ton d/d address in barrels.

SODA ASH.—58% spot, £6 per ton f.o.r. in bags, special terms for contracts.

SODA, CAUSTIC.—Solid 76/77° spot £14 10s. per ton d/d station. SCOTLAND: Powdered 98/99% £17 10s. in drums, £18 15s. in casks. Solid 76/77% £14 10s. in drums, 70/72% £14 12s. 6d. carriage paid buyer's station, minimum 4-ton lots; contracts 10s. per ton less. MANCHESTER: £12 15s. to £14 contracts.

SODA CRYSTALS.—Spot £5 to £5 5s. per ton d/d station or ex depot in 2-cwt. bags.

SODIUM ACETATE.—97/98%, £21 per ton; LONDON: £22 to £23.

SODIUM BICARBONATE.—Refined spot £10 10s. per ton d/d station in bags. SCOTLAND: Refined recrystallised £10 10s. ex quay or station. MANCHESTER: £10 10s.

SODIUM BICHROMATE.—Crystals cake and powder 4d. per lb. net d/d U.K. discount according to quantity. Anhydrous 5d. per lb. LONDON: 4d. per lb. with usual discounts for contracts. SCOTLAND: 4d. delivered buyer's premises with concession for contracts. MANCHESTER: 4d. less 1 to 3½% contracts, 4d. spot lots.

SODIUM BISULPHITE POWDER.—60/62%, £16 10s. per ton d/d 1-cwt. iron drums for home trade.

SODIUM CARBONATE (SODA CRYSTALS).—SCOTLAND: £5 to £5 5s. per ton ex quay or station. Powdered or pea quality 7s. 6d. per ton extra. Light Soda Ash £7 ex quay, min. 4-ton lots with reductions for contracts.

SODIUM CHLORATE.—23d. per lb. LONDON: £30 per ton. *£32 in one-ton lots. MANCHESTER: £29 to £30.

SODIUM CHROMATE.—3½d. per lb. d/d U.K.

SODIUM HYPOSULPHITE.—SCOTLAND: Large crystals English manufacture £9 5s. per ton ex stations, min. 4-ton lots. Pea crystals £15 ex station 4-ton lots. MANCHESTER: Commercial, £9 5s.; photographic, £15 to £15 10s.

SODIUM NITRITE.—Spot £19 to £22 per ton d/d station in drums.

SODIUM PERBORATE.—LONDON: *10d. per lb.

SODIUM PHOSPHATE.—£13 to £15 per ton f.o.r. London casks free. LONDON: Dibasic, £13 per ton. MANCHESTER: £13.

SODIUM PRUSSIAN.—LONDON: 5d. to 5½d. per ton. SCOTLAND: 5d. to 5½d. ex store. MANCHESTER: 5½d. to 6½d.

SODIUM SILICATE.—140° Tw. Spot £8 5s. per ton d/d station returnable drums.

SODIUM SULPHATE (GLAUBER SALTS).—£4 2s. 6d. per ton d/d. SCOTLAND: English material £3 15s.

SODIUM SULPHATE (SALT CAKE).—Unground Spot £3 15s. per ton d/d station in bulk. SCOTLAND: Ground quality, £3 5s. per ton d/d. MANCHESTER: £3 2s. 6d.

SODIUM SULPHIDE.—Solid 60/62% Spot £10 15s. per ton d/d in drums. Crystals Spot £7 15s. per ton d/d in casks. SCOTLAND: For home consumption, Solid 60/62%, £10 5s.; broken 60/62%, £11 5s.; crystals, 30/32%, £8 2s. 6d. d/d buyer's works on contract, min. 4-ton lots. Spot solid 5s. per ton extra. Crystals, 2s. 6d. per ton extra. MANCHESTER: Concentrated solid, 60/62%, £11 10s.; commercial, £8 5s.

SODIUM SULPHITE.—Pea crystals spot, £13 10s. per ton d/d station in kegs. Commercial spot £9 10s. d/d station in bags.

SULPHATE OF COPPER.—MANCHESTER: £18 10s. per ton f.o.b.

SULPHUR.—£12 5s. to £15 15s. per ton. SCOTLAND: Flowers, £12 10s.; roll, £12 10s.; rock, £9. Ground American, £12 ex store.

SULPHUR CHLORIDE.—5d. to 7d. per lb., according to quality.

SULPHUR PRECIP.—B.P. £55 to £60 per ton according to quantity. Commercial, £50 to £55.

VERMILION.—Pale or deep, 6s. 8d. to 6s. 10d. per lb.

ZINC CHLORIDE.—SCOTLAND: British material, 98%, £18 10s. per ton f.o.b. U.K. ports.

ZINC SULPHATE.—LONDON: £12 per ton. SCOTLAND: £12 per ton.

ZINC SULPHIDE.—1s. to 1s. 2d. per lb.

Pharmaceutical and Photographic Chemicals

THERE are no changes to report in the markets for pharmaceutical products.

Coal Tar Products

ACID, CARBOLIC (CRYSTALS).—5½d. to 6½d. per lb. Crude, 60's 1s. 4d. to 1s. 5d. per gal. SCOTLAND: *Sixties, 1s. 7d. to 1s. 8d. ex works in buyers' tanks.

ACID, CRESYLIC.—99/100, 1s. 8d. to 1s. 9d. per gal.; B.P., 2s. 6d. to 3s.; Refined, 2s. to 2s. 2d.; Pale, 98%, 1s. 7d. to 1s. 8d.; Dark, 1s. 4d. to 1s. 4½d. LONDON: 98/99%, 1s. 6d. Dark 95/97%, 1s. 4d.; 97/99%, 1s. 7d. to 1s. 9d.; 99/100%, 1s. 10d. to 2s. SCOTLAND: *Pale, 99/100%, 1s. 3½d. to 1s. 4½d.; 97/99%, 1s. 1½d. to 1s. 2½d.; dark 97/99%, 1s. 0½d. to 1s. 1½d.; f.o.r. makers' works; high boiling acid, 2s. 6d. to 2s. 9d.

BENZOL.—At works crude 7d. to 7½d. per gal. Standard motor, 1s. 2d. to 1s. 3d.; 90%, 1s. 3d. to 1s. 4d. Pure, 1s. 6d. to 1s. 7d. LONDON: Motor, 1s. 5½d. SCOTLAND: *Motor, 1s. 3½d. to 1s. 4½d.

CREOSOTE.—Standard for export, 4½d. to 5d. nett per gal. f.o.b. for Home, 3½d. d/d. LONDON: 3d. to 3½d. f.o.r. North; 4d. to 4½d. LONDON. MANCHESTER: 3½d. to 4½d. SCOTLAND: *Specification oils, 3d. to 3½d.; washed oil, 3½d. to 4d.; gasworks ordinary, 3½d. to 4d.; f.o.r. makers' works in bulk.

NAPHTHA.—Solvent, 90/160, 1s. 3d. per gal.; 95/160, 1s. 5d. to 1s. 6d.; 90/190, 11d. to 1s. 2d. LONDON: Solvent, 1s. 1½d. to 1s. 2d.; heavy, 11d. to 1s. 0½d. f.o.r. SCOTLAND: *90/160 solvent, 1s. 2½d. to 1s. 3½d.; heavy solvent, 90/190, 1s. 0½d. to 1s. 1½d. in bulk ex works.

NAPHTHALENE.—Purified crystals, £11 10s. per ton in bags. LONDON: Fire lighter quality, £3 to £3 10s.; 74/76 quality, £4 to £4 10s.; 76/78 quality, £5 10s. to £6.

PITCH.—Medium Soft, £4 10s. to £4 15s. per ton in bulk at makers' works. LONDON: £4 2s. 6d. to £4 7s. 6d. f.o.b. East Coast port. MANCHESTER: £4 to £4 10s. f.o.b. SCOTLAND: *Coal tar pitch, export, 77s. 6d. to 82s. 6d. f.o.b. Glasgow; home, £4 to £4 5s. ex works wagon loads; blast furnace, £3 f.o.r. works and £3 5s. f.a.s. Glasgow for export.

PYRIDINE.—90/140, 4s. per gal.; 90/160, 4s. to 4s. 6d.; 90/180, 2s. to 2s. 6d.

REFINED COAL TAR.—SCOTLAND: *4½d. to 4¾d. per gal. f.o.r. naked.

TOLUOL.—90%, 2s. 4d. per gal.; Pure, 2s. 6d.

XYLOL.—2s. per gal.; Pure, 2s. 3d.

Intermediates and Dyes

IN the following list of Intermediates delivered prices include packages except where otherwise stated:—

ACID, BENZOIC, B.P. (ex Toluol).—1s. 9½d. per lb.

ACID, GAMMA.—Spot, 4s. per lb. 100% d/d buyer's works.

ACID H.—Spot, 2s. 4½d. per lb. 100% d/d buyer's works.

ACID, NAPHTHONIC.—1s. 2d. per lb. 100% d/d buyer's works.

ACID, NEVILLE AND WINTHER.—Spot, 3s. per lb. 100% d/d buyer's works.

ACID, SULPHANILIC.—Spot, 8½d. per lb. 100% d/d buyer's works.

ANILINE OIL.—Spot, 8d. per lb., drums extra, d/d buyer's works.

ANILINE SALTS.—Spot, 8d. per lb. d/d buyer's works, casks free.

BENZALDEHYDE.—Spot, 1s. 8d. per lb., packages extra, d/d buyer's works.

BENZIDINE BASE.—Spot, 2s. 5d. per lb. 100% d/d buyer's works.

o-CRESOL 30/31° C.—£2 6s. 5d. per cwt., in 1-ton lots.

m-CRESOL 98/100%.—2s. 9d. per lb., in ton lots.

p-CRESOL.—34.5° C.—1s. 9d. per lb., in ton lots.

DICHLORANILINE.—2s. 2d. per lb.

DIMETHYLANILINE.—Spot, 1s. 6d. per lb., packages extra, d/d buyer's works.

DINITROBENZENE.—8½d. per lb.

DINITROTOLUENE.—48/50° C., 8d. per lb.; 66/68° C., 8½d. per lb.

DIPHENYLAMINE.—Spot, 2s. per lb., d/d buyer's works.

a-NAPHTHOL.—Spot, 2s. 4d. per lb., d/d buyer's works.

B-NAPHTHOL.—Spot, £75 per ton in 1 ton lots, d/d buyer's works.

a-NAPHTHYLAMINE.—Spot, 11½d. per lb., d/d buyer's works.

B-NAPHTHYLAMINE.—Spot, 2s. 9d. per lb. d/d buyer's works.

o-NITRANILINE.—5s. 10d. per lb.

m-NITRANILINE.—Spot, 2s. 6d. per lb. d/d buyer's works.

p-NITRANILINE.—Spot, 1s. 8d. per lb. d/d buyer's works.

NITROBENZENE.—Spot, 6½d. per lb.; 5-cwt. lots, drums extra, d/d buyer's works.

NITRONAPHTHALENE.—8½d. per lb.

SODIUM NAPHTHONATE.—Spot, 1s. 9d. per lb. 100% d/d buyer's works.

o-TOLUIDINE.—Spot, 9½d. per lb., drums extra, d/d buyer's works.

p-TOLUIDINE.—Spot, 1s. 9d. per lb., d/d buyer's works.

m-XYLIDINE ACETATE.—3s. 6d. per lb., 100%.

Wood Distillation Products

ACETATE OF LIME.—Brown, £7 10s. per ton. Grey, £12 10s. per ton. Liquor, 8d. to 9d. per gal.

ACETIC ACID, TECHNICAL, 40%.—£16 15s. to £17 15s. per ton.

ACETONE.—£63 to £65 per ton.

AMYL ACETATE, TECHNICAL.—95s. to 100s. per cwt.

CHARCOAL.—£7 10s. to £11 per ton, according to grade and locality.

IRON LIQUOR.—24°/30° Tw., 10d. to 1s. 2d. per gal.

METHYL ACETONE.—40/50%.—£52 per ton.

RED LIQUOR.—16° Tw., 8½d. to 10d. per gal.

WOOD CREOSOTE.—1s. to 2s. 6d. per gal., unrefined.

WOOD NAPHTHA, MISCIBLE.—3s. to 4s. per gal. Solvent, 3s. 9d. to 4s. 9d. per gal.

WOOD TAR.—£2 10s. to £6 per ton.

BROWN SUGAR OF LEAD.—£32 per ton.

Nitrogen Fertilisers

SULPHATE OF AMMONIA.—Export.—The demand from consuming markets continues satisfactory, but in view of the plentiful nature of supplies prices have not risen. The f.o.b. price in single bags remains at £5 5s. per ton. **Home.**—There is a brisk demand for sulphate all over the country as well as in Scotland and Ireland. Reports from merchants indicate that the volume is considerably in excess of that of last year. The price of £7 per ton, delivered in 6-ton lots to consumers' nearest stations, remains in operation.

IMPORTED NITRATE OF SODA.—The price of £9 per ton, delivered in 6-ton lots to consumers' stations remains unchanged.

NITRO-CHALK.—A good demand is being experienced in the South of England. The price of £7 5s. per ton remains unchanged.

* Prices quoted by other manufacturers.

† From our own market correspondent.

Latest Oil Prices

LONDON, March 9.—LINSEED OIL was steady. Spot, ex mill, £18; March, £15 5s.; March-April, £15 10s.; May-August, £16 5s.; September-December, £17 10s., naked. RAPE OIL was quiet. Crude, extracted, £31; technical refined, £33, naked, ex wharf. COTTON OIL was quiet. Egyptian, crude, £23; refined common edible, £27 10s.; deodorised, £29 10s.; naked, ex mill. TURPENTINE was easy. American, spot, 58s. 6d.; April, 59s. per cwt.

HULL.—LINSEED OIL, spot, closed at £14 17s. 6d.; March-April at £15 2s. 6d.; May-August at £16; and September-December at £17, naked. COTTON OIL, Egyptian, crude, spot, £22 5s.; edible, refined, spot, £24 10s.; technical, spot, £24 10s.; deodorised, £26 10s., naked. PALM KERNEL OIL, crude, f.m.g., spot, £26, naked. GROUND-NUT OIL, crushed extracted, spot, £39 10s.; deodorised, £43 10s. RAPE OIL, crushed extracted, spot, £30; refined, £32. SOYA OIL, crushed extracted, spot, £23 10s.; deodorised, £27 per ton. COD OIL, 16s. 6d. per cwt. CASTOR OIL, pharmacy, spot, 48s. 6d.; first, 43s. 6d.; second, 41s. 6d. per cwt. TURPENTINE, American, spot, 62s. per cwt.

South Wales By-Products

THERE is scarcely any change in South Wales by-product activities. Business in most products is slow and unsatisfactory. Against this present slowness, however, must be placed the belief that the long spell of unsatisfactory business is at last approaching an end, and that a more active period will set in about the end of the present month. The demand for pitch continues to be slow and confined to small prompt parcels. The big users, particularly the patent fuel makers, are buying on a week to week basis, and it is unlikely that there will be a change from this until a definite improvement in patent fuel business sets in. Pitch quotations are unchanged. There is a slightly better call for road tar, with values unchanged round about 13s. per 40-gal. barrel delivered. Refined tars have a fairly steady, if moderate, demand with values unchanged for gasworks and coke oven tar. Naphthas remain unsatisfactory, solvent having only a small demand, while the heavy demand is virtually non-existent. Creosote remains weak, but motor benzol is a fairly bright feature. Patent fuel prices are:—19s. to 19s. 3d., ex-ship, Cardiff; 18s. to 18s. 3d., ex-ship, Swansea. Coke prices are:—Best foundry, 32s. 6d. to 36s.; good foundry, 22s. 6d. to 25s.; furnace, 17s. to 18s.

Company News

TARMAC, LTD.—A dividend of 6 per cent. for the year 1931 is announced. This compares with 5 per cent. in 1930 and 4 per cent. in 1929. The annual meeting will be held in Birmingham on March 17.

EVANS, SONS, LESCHER AND WEBB, LTD.—The trading profit for 1931 was £12,976 (against £19,242), and the balance transferred to balance-sheet is £5,728, as compared with £11,942 last year. After providing for mortgage and leasehold redemption account, £1,534, and interest on credit notes £2,720, the balance carried forward is £2,092.

AMALGAMATED ZINC (DE BAVAY'S), LTD.—The directors have declared a dividend of 2½ per cent. for the six months ended December 31 last, payable on April 9. With the interim paid in October, this brings the year's distribution to 5 per cent., against 8 per cent. paid in 1930.

COURTAULDS, LTD.—Gross profits for the year 1931 amounted to £3,132,693, of which income-tax and Excise duty absorbed £2,004,538. The net profits were £1,101,587, against £2,274,408 in 1930, and are supplemented by £450,000 from contingencies reserve. The ordinary dividend is to be 5 per cent., against 6 per cent., tax free, and £147,343 is to be carried forward, against £195,756 brought in.

COOPER, MCDUGALL AND ROBERTSON, LTD.—The trading profit in the year to September 30 last was £226,642, against £238,097 in 1929-30, but against this has to be charged and reserved £143,797, compared with £68,797, for exchange losses, with the result that the net profit is down from £106,802 to £84,265. No ordinary dividend is proposed, this being the first omission since the company was made public, but the general reserve allocation is raised from £10,000 to £25,000.

SHAWINIGAN WATER AND POWER.—The report for 1931 shows gross earnings \$13,693,194.63 and net before depreciation \$4,750,438.05. The corresponding figures for 1930 were \$14,954,074.68 and \$6,570,670.56. After appropriating \$600,000 for depreciation and renewal reserve and paying dividends on common shares at annual rate of \$2.50 per share for the first half-year, and at the annual rate of \$2 per share for the last half-year, the balance carried forward is \$576,455, subject to deduction for 1931 income-tax.

INTERNATIONAL PAINT AND COMPOSITIONS CO.—For the year 1931 the net profit amounted to £90,364, which is a reduction

of £20,541, compared with the record figure of £110,905 reported for 1930. The dividend on the ordinary shares is to be reduced from 12 per cent. to 9 per cent. (of which 3 per cent. was paid in September last as an interim distribution), and the allocation to reserve is £5,000 less at £20,000. A further £6,000 is to be written off the Standard Paint Co., and £3,000 is again to be added to the staff benefit fund, leaving £14,833 to be carried forward (against £13,574).

New Companies Registered

BRITISH FUEL AND UTILITIES CO., LTD. Registered March 7. Nominal capital £100 in 1s. shares. To adopt an agreement with A. A. Roberts, to acquire patent No. 5,395/32, for an invention relating to the manufacture of artificial fuel, and to carry on the business of artificial or patent fuel manufacturers, dealers in coal, coke or other elements or chemicals employed in the manufacture of such fuels, etc. Directors: A. A. Roberts, Park Lane Hotel, Piccadilly, London, W.; M. Daniels.

OIL SEED TRADING CO., LTD., 21 Mincing Lane, London, E.C. Registered March 4. Nominal capital £1,000 in 6d. shares. Dealers in and manufacturers of oil seeds, essential oils, copra, margarine, glycerine and chemicals, manufacturers of and dealers in medical and toilet preparations and requisites, etc.

SILKOL LUBRICANTS, LTD., 89 Upper Thames Street, London, E.C. Registered March 8. Nominal capital £1,000 in 1s. shares. Producers, refiners, storers, suppliers and distributors of lubricating and crude oil, petroleum and oil and petroleum products, etc.

Chemical Trade Inquiries

These inquiries, abstracted from the "Board of Trade Journal," have been received at the Department of Overseas Trade (Development and Intelligence), 35 Old Queen Street, London, S.W.1. British firms may obtain the names and addresses of the inquirers by applying to the Department (quoting the reference number and country) except where otherwise stated.

BELGIUM.—An agent at Brussels wishes to obtain the representation of United Kingdom exporters of hemp, sisal, manila and jute. (Ref. No. 464.)

CANADA.—A firm of wholesale and retail dealers in welding supplies and accessories is prepared to represent United Kingdom manufacturers of waterproof paint, welding cement, etc. The area covered at present is the Province of Ontario and Quebec, but extension is contemplated to cover the whole Dominion. (Ref. No. 449.)

CANADA.—A manufacturers' agent at Toronto is prepared to undertake the representation of United Kingdom manufacturers of hypochlorite of lime, activated carbon, etc., in Eastern Canada. (Ref. No. 455.)

CHINA (SHANGHAI).—A gentleman who has for some years been the manager in Shanghai of a well-known United Kingdom company proposes to establish himself at Shanghai as a manufacturers' representative and desires agencies in chemical and pharmaceutical preparations, drugs and druggists' sundries. (Ref. No. 480.)

CUBA.—A commission agent at Havana desires to establish business relations with United Kingdom exporters of palm oil and cocoanut oil for the manufacture of soap. Ref. No. 486.)

EGYPT.—The Equipment and Finance Department, Ministry of the Interior, Egypt, is calling for tenders, by April 20, for photographic chemicals, plates, papers and films for 1932-33. (Ref. B.X. 7,287.)

FRANCE.—An agent in Paris wishes to obtain the representation of United Kingdom manufacturers of plant for chemical and allied trades, metallurgical industry and general machinery. (Ref. No. 467.)

POLAND.—An agent established in Warsaw desires to obtain representation of United Kingdom manufacturers of chemicals, fats, tallow and cocoanut oil for the soap making industry. (Ref. No. 472.)

SPAIN.—A commission agent in Barcelona wishes to get into touch with United Kingdom manufacturers of sodium and potassium bichromate, sodium and potassium prussiate and barium chloride. (Ref. No. 474.)

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